ORDER NO. EMID981692
A4

Service Manual

PANA -09615

PCM Digital Ensemble

SX-PR602 /PR602M

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (XT), (X), (XP), (XW)

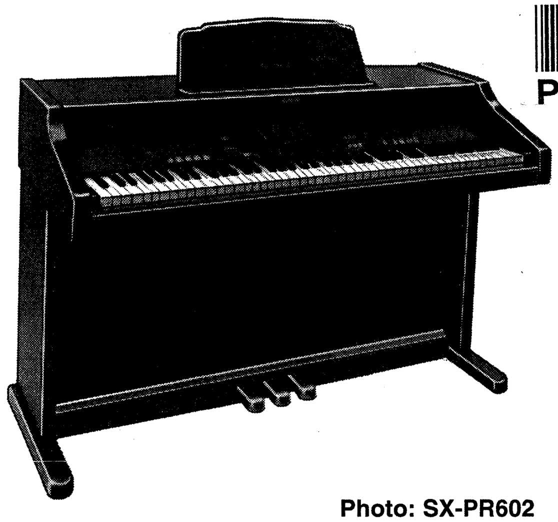

Photo: SX-PR602

AREAS

(M): U.S.A.
(MC): Canada
(XM): Mexico
(EN): Norway, Sweden, Denmark, Finland
(EH): Holland, Belgium
(EF): France, Italy
(EZ): Germany
(EW): Switzerland
(EA): Austria
(EP): Spain, Portugal, South Africa
(EK): the United Kingdom
(XL): New Zealand
(XR): Australia
(XS): Malaysia
(XD): Hong Kong
(XT): Taiwan
(X): Thailand, Panama, Venezuela, Ecuador, Colombia, Chile, Peru, Brasil
(XP): Philippines
(XW): Singapore

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD		88 KEYS
SOUND GENERATOR		PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY		64 NOTES
SOUNDS	NUMBER OF SOUNDS	278 SOUNDS + 12 DRUM KITS
	PIANO	GRAND, UPRIGHT, ELECTRIC, MODERN
	SOUND GROUP	GUITAR & HARPSI, STRINGS & VOCAL, BRASS, SAX & WOODWIND, ORGAN & ACCORDION, SYNTH, MALLET & ORCH PERC, MIXTURES, GM SPECIAL, BASS, DRUM KITS
	GM SOUNDS	128 SOUNDS
SOLO PIANO		○
TOUCH SENSITIVITY		○
PEDAL		SUSTAIN, SOSTENUTO, SOFT
EFFECT		SUSTAIN PEDAL, DIGITAL EFFECT, DSP EFFECT, BRILLIANCE, PIANO AMBIENCE, DIGITAL REVERB
PART SELECT		RIGHT1, RIGHT2, LEFT
TRANSPOSE		G-C-F#
RHYTHMS	NUMBER OF RHYTHMS	128 RHYTHMS ×4 VARIATIONS
	RHYTHM GROUP	ROCK & POP, JAZZ & BLUES, COUNTRY, BALLAD, LATIN & WORLD, SOUL & DISCO, BIG BAND & SWING, USA TRAD,MARCH & WALTZ, SHOW TIME & TRAD DANCE
METRONOME		○
CONTROLS		MAIN VOLUME, APC/SEQUENCER VOLUME, BALANCE, MUTE, CONDUCTOR, START/STOP, INTRO & ENDING 1, INTRO & ENDING 2, FILL IN 1, FILL IN 2, COUNT INTRO, SYNCHRO START, TEMPO/PROGRAM, TAP TEMPO, FADE IN/OUT, SPLIT POINT, R1/R2 OCTAVE
AUTO PLAY CHORD		MODE: BASIC, ADVANCED 1, ADVANCED 2, PIANIST ON BASS, CHORD FINDER, LEFT HOLD

Technics

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MUSIC STYLE ARRANGER	○
SOUND ARRANGER	○
PIANO STYLIST	○
ONE TOUCH PLAY	○
TECHNI-CHORD	○
PANEL MEMORY	3 BANKS × 8, SET, NEXT BANK, BANK VIEW
SEQUENCER	16 TRACKS RESOLUTION : 1/96 PER BEAT STORAGE CAPACITY : APPROX. 40000 NOTES (10 SONGS MAX.) INPUT MODES : EASY RECORD, REALTIME RECORD, STEP RECORD FUNCTIONS : CREATE, EDIT
COMPOSER	5 PARTS : BASS, ACCOMP 1, ACCOMP 2, ACCOMP 3, DRUMS STORAGE CAPACITY : APPROX. 10000 NOTES INPUT MODES : EASY COMPOSER, REALTIME RECORD, STEP RECORD FUNCTIONS : PATTERN COPY, SEQ TO COMPOSER COPY, LOAD SINGLE COMPOSER MEMORY : 3 BANKS×10 (VARIATION 1–4, INTRO 1, 2, FILL IN 1, 2, ENDING 1, 2)
DISK DRIVE	3.5 inch FLOPPY DISK DRIVE for 2HD (1.44 MB), 2DD (720 KB) LOAD, SAVE, DIRECT PLAY, SONG MEDLEY, DISK TOOLS, PREFERENCES
SOUND SETTING	PART SETTING, MIXER, MASTER TUNING, KEY SCALING, TECHNI-CHORD, REVERB, TONE CONTROL, DSP EFFECT, PIANO AMBIENCE
SOUND EDIT	EASY EDIT, TONE SELECT, TONE LAYER, PITCH, FILTER, AMPLITUDE, DIGITAL EFFECT, CONTROLLER MEMORY: 40, 1 USER DRUM KIT
CONTROL	INITIAL, PEDAL SETTING, DISPLAY TIME OUT, PANEL MEMORY MODE, MUSIC STYLE ARRANGER MODE, FADE IN/OUT SETTING
DISPLAY	LCD PAGE, CONTRAST, EXIT, DISPLAY HOLD
HELP	○
DEMO	○
TERMINALS	PHONES × 2, LINE OUT (R/R+L, L), AUX IN (R/R+L, L), COMPUTER, MIDI (IN, OUT, THRU), PEDAL IN
OUTPUT	120 W (60 W × 2)
SPEAKERS	16 cm×2, 6.5 cm×2
POWER REQUIREMENT	120 W
	AC120/220/240 V 50/60 Hz AC120 V 60 Hz (NORTH AMERICA AND MEXICO) AC230-240 V 50/60 Hz (EUROPE, AUSTRALIA, NEW ZEALAND, SINGAPORE AND PHILIPPINES)
DIMENSIONS (W × H × D)	140.6 cm×106.5 cm×61.0 cm (55-11/32"×41-15/16"×24-1/32")
NET WEIGHT	60kg (132.3lbs.)
ACCESSORIES	AC CORD, MUSIC STAND, FLOPPY DISK

•Specifications are subject to change without notice for further improvement.

WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.
2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.
3. Use the specified types for internal wiring (double-insulated wiring, etc.).
4. When replacing parts on the AC primary side (power transformer, electric switch, electrical cord, noise-prevention condenser, etc.), wind the lead wire and secure it by soldering.
5. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).
6. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.
7. When replacing the power cord (except for the plug-in type), tug it from various directions to confirm that it does not slip out of place.
8. Spacing
   If soldering was done on the AC primary circuit, confirm that the interval between the soldered terminals or between the terminal and surrounding metallic parts is at least the minimum required (between the primary circuit and the chassis: at least 6.5 mm; between primary circuit terminals: at least 4.0 mm; between primary circuit terminals and secondary circuit terminals: at least 6.5 mm).

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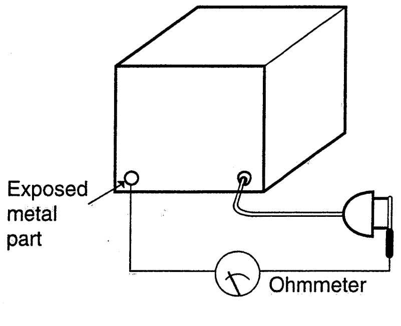
SAFETY PRECAUTION

● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

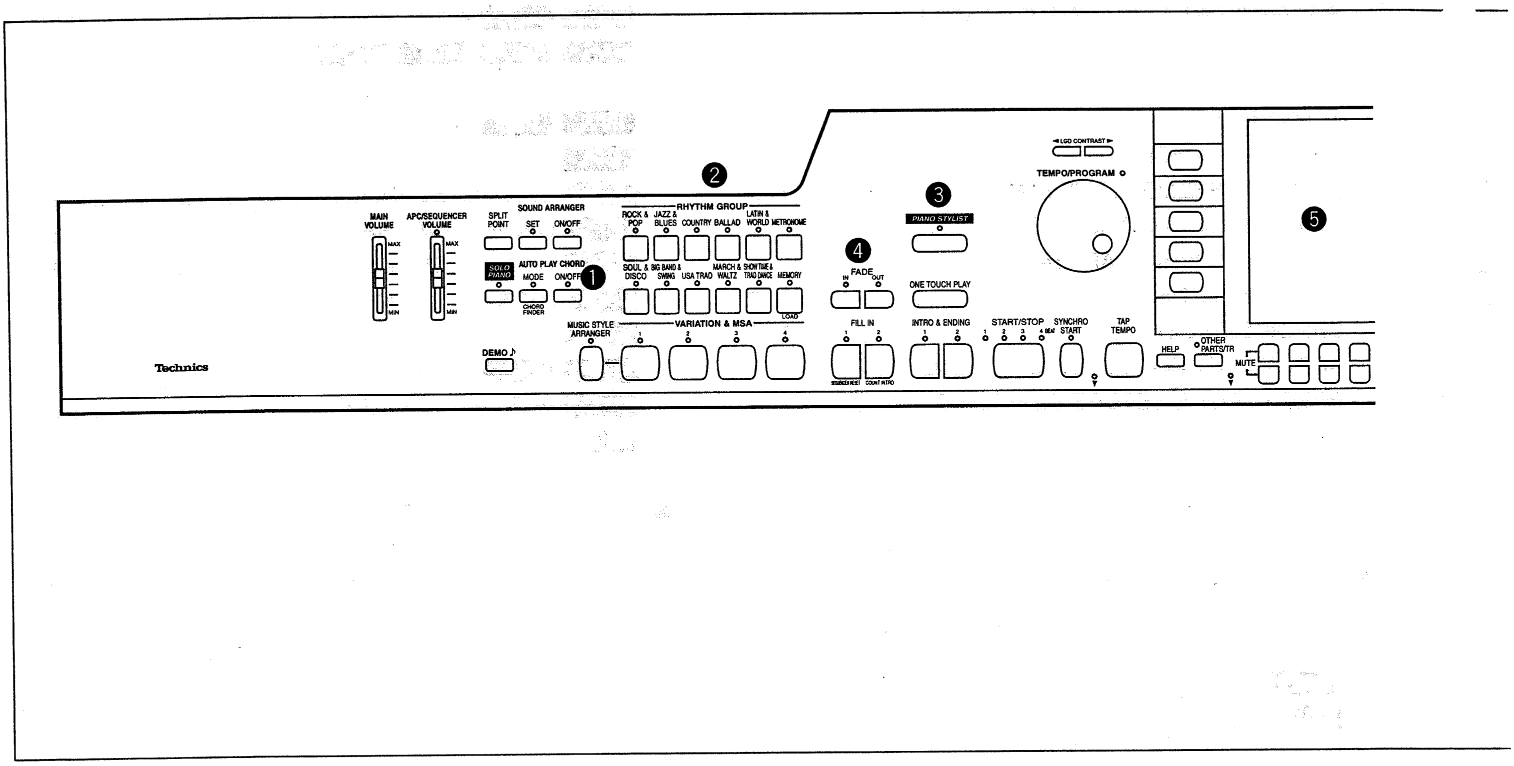
● Insulation Resistance Test

1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. Measurements should range from 4 MΩ to infinity for all exposed parts.



Resistance = 4MΩ to ∞

ARRANGEMENT OF CONTROL PANEL



Technics
MAIN VOLUME
APC/SEQUENCER VOLUME
MAX
MIN
SPLIT POINT
SOUND ARRANGER
SET
ON/OFF
SOLO PIANO
AUTO PLAY CHORD
MODE
ON/OFF
CHORD FINDER
DEMO ♪
MUSIC STYLE ARRANGER
RHYTHM GROUP
ROCK & POP
JAZZ & BLUES
COUNTRY
BALLAD
LATIN & WORLD
METRONOME
SOUL & DISCO
BIG BAND & SWING
USA TRAD
MARCH & WALTZ
SHOW TIME & TRAD DANCE
MEMORY
LOAD
VARIATION & MSA
1
2
3
4
FADE
IN
OUT
FILL IN
SEQUENCER RESET
COUNT INTRO
PIANO STYLIST
ONE TOUCH PLAY
INTRO & ENDING
START/STOP
1 2 3 4 BEAT
SYNCHRO START
TAP TEMPO
LCD CONTRAST
TEMPO/PROGRAM
HELP
OTHER PARTS/TR
MUTE
❶
❷
❸
❹
❺

❶ AUTO PLAY CHORD
Add an automatic accompaniment to your selected rhythm.

❷ RHYTHM GROUP
Various rhythm patterns are available for each rhythm group.

❸ PIANO STYLIST
You can choose to have all the settings of this instrument automatically set.

❹ FADE IN/OUT
Begin your song with a slowly increasing volume, or end it by having the sound slowly fade away.

❺ DISPLAY
Displays performance information, function settings and other messages.
- Use the LCD CONTRAST buttons to adjust the display so that it is easy to read.

❻ PANEL MEMORY
Store the panel settings, then recall them instantaneously just by pressing a button or two.

❼ CONDUCTOR
Assign a different sound to each part, then assign the desired parts to sections of the keyboard.

❽ TRANSPOSE
Raise or lower the key of the entire keyboard.

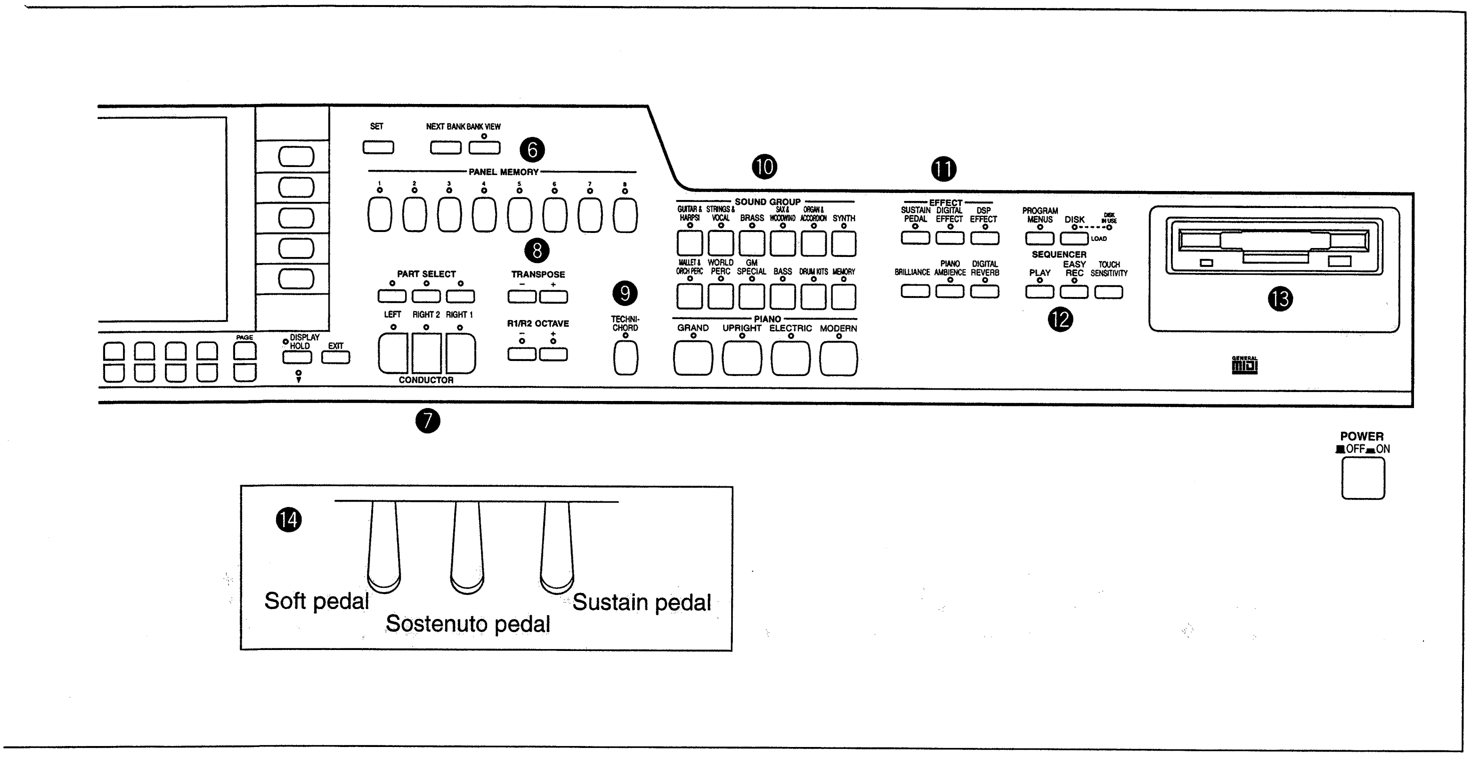
❾ TECHNI-CHORD
Block chords are automatically added to the melody.

❿ SOUND GROUP
Various sounds are available for each sound group.

⓫ EFFECT
Add various effects to the sounds.

⓬ SEQUENCER
Record and play back your performance.

⓭ Disk Drive
The Disk Drive allows you to record your performances on a floppy disk, as well as play commercial recorded disks on this instrument.


SET
NEXT BANK
BANK VIEW
6
PANEL MEMORY
1
2
3
4
5
6
7
8
8
PART SELECT
TRANSPOSE
−
+
9
LEFT
RIGHT 2
RIGHT 1
R1/R2 OCTAVE
−
+
TECHNI-CHORD
CONDUCTOR
PAGE
DISPLAY HOLD
EXIT
7
10
SOUND GROUP
GUITAR & HARPSI
STRINGS & VOCAL
BRASS
SAX & WOODWIND
ORGAN & ACCORDION
SYNTH
MALLET & ORCH PERC
WORLD PERC
GM SPECIAL
BASS
DRUM KITS
MEMORY
PIANO
GRAND
UPRIGHT
ELECTRIC
MODERN
11
EFFECT
SUSTAIN PEDAL
DIGITAL EFFECT
DSP EFFECT
BRILLIANCE
PIANO AMBIENCE
DIGITAL REVERB
PROGRAM MENUS
DISK
DISK IN USE
LOAD
SEQUENCER
PLAY
EASY REC
TOUCH SENSITIVITY
12
13
GENERAL MIDI
POWER
■OFF▄ON
14
Soft pedal
Sostenuto pedal
Sustain pedal

⑭ Pedals

The sustain pedal and sostenuto pedal apply sustain effects, and the soft pedal works as a damper.

Tuning

Unlike an acoustic piano, PR Series Digital Ensemble never needs tuning.

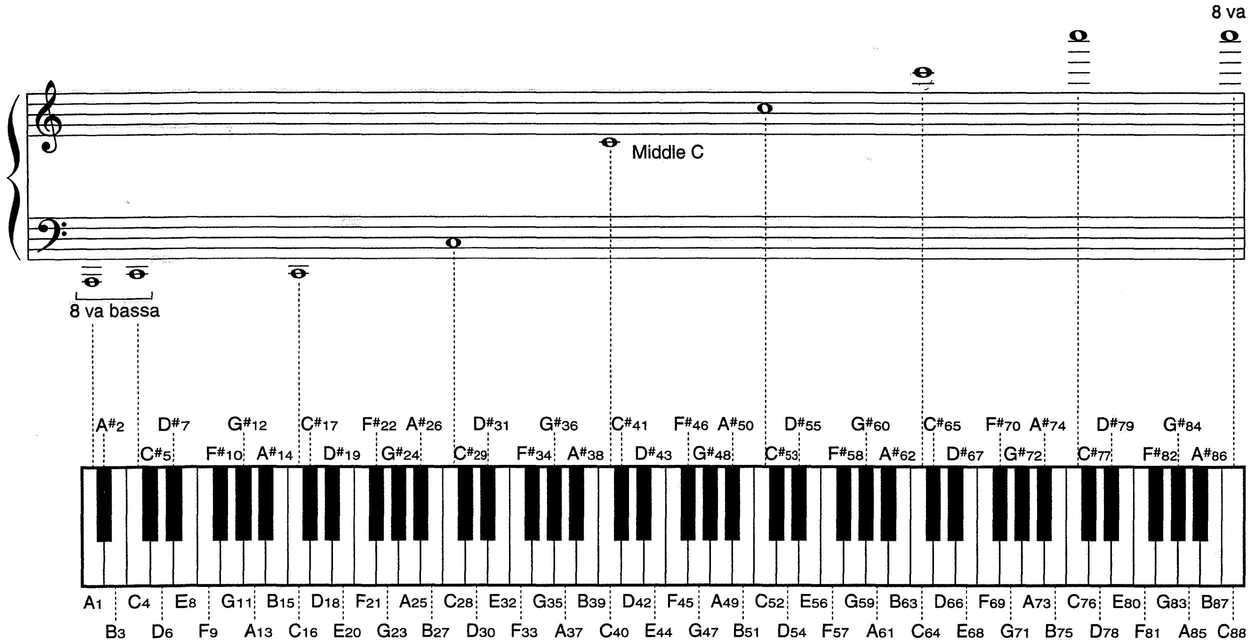
The pitch of this instrument can be adjusted for when playing along with other instruments.

About the backup memory

The settings and memories are maintained for approximately 80 minutes after the power to this instrument is turned off. If you wish to keep the memory contents, before you turn off the instrument, use the SAVE procedure to store the desired data on a disk for recall at a later time.

- The backup memory does not function until the power has been on for about 10 minutes.
- When you quit the operating mode, a REMINDER display may appear to remind you to save the data.

KEYBOARD RANGES


8 va
Middle C
8 va bassa
A#2 D#7 G#12 C#17 F#22 A#26 D#31 G#36 C#41 F#46 A#50 D#55 G#60 C#65 F#70 A#74 D#79 G#84
C#5 F#10 A#14 D#19 G#24 C#29 F#34 A#38 D#43 G#48 C#53 F#58 A#62 D#67 G#72 C#77 F#82 A#86
A1 C4 E8 G11 B15 D18 F21 A25 C28 E32 G35 B39 D42 F45 A49 C52 E56 G59 B63 D66 F69 A73 C76 E80 G83 B87
B3 D6 F9 A13 C16 E20 G23 B27 D30 F33 A37 C40 E44 G47 B51 D54 F57 A61 C64 E68 G71 B75 D78 F81 A85 C88

INITIAL SETTING

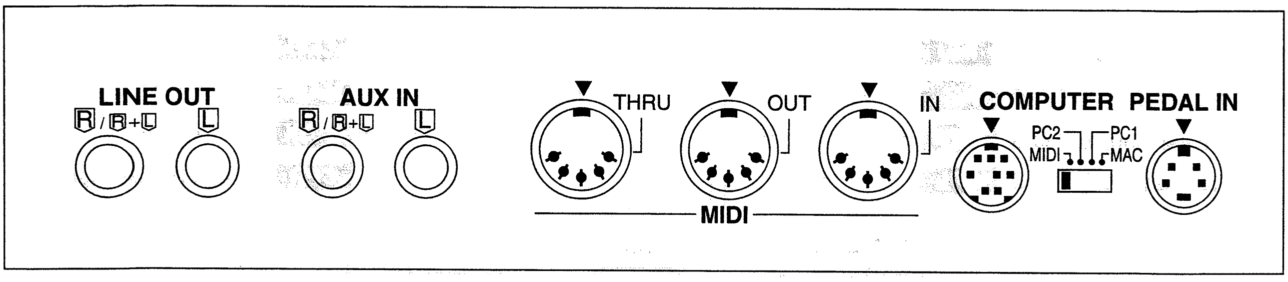
The following procedure resets all programmable settings, functions and memories to their initialized (factory-preset) status. Use this procedure if the buttons, keys, etc. malfunction, or when you wish to reset the memories and functions.

1. Turn off the **POWER** button.
2. While pressing the three lower left buttons in the **RHYTHM GROUP** section (**SOUL & DISCO**, **BIG BAND & SWING** and **USA TRAD**) at the same time, turn the **POWER** button on again.

NOTE:
All stored data in the SEQUENCER and COMPOSER and other user settings will be deleted with this operation.

TERMINALS

(on the rear panel)



LINE OUT (output level 1.5 Vrms, 600 Ω)
By connecting an external high-power amplifier, the sound can be reproduced at a high volume. To output monaural sound, connect the external equipment to the **R/R+L** terminal. (Do not connect the **L** terminal.)

AUX IN (input level 0.5 Vrms, 6 kΩ)
Other instruments such as a sound generator can be connected to this terminal, and the sound will be output from this instrument's speakers. To receive monaural sound, connect the other instrument to the **R/R+L** terminal. (Do not connect the **L** terminal.)

MIDI
These terminals are for connection to another MIDI instrument.

COMPUTER
By connecting this terminal to the serial port of a computer, performance data can be exchanged. Use the switch to select the type of computer.

- Be sure that the power to this instrument is turned off when connecting to a computer or when changing the switch setting.

Caution:
Failure to turn off the power before changing the switch setting may result in malfunction.

- When no computer is connected, or when a MIDI interface is used, the switch should be set to MIDI.

Connection to a Macintosh series computer
Use an ACCESSORY CABLE (SZ-JJAP1: sold separately) to connect the **COMPUTER** terminal of this instrument to the modem port or printer port of a Macintosh Series computer. Set the switch to **MAC**.

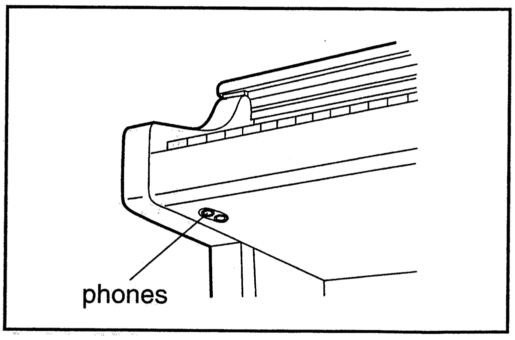
- Set the MIDI interface clock of the Macintosh software to 1 MHz.
- Do not remove the core at either end of the cable.

Connection to a PC
Use an ACCESSORY CABLE (SZ-JJAT1: sold separately) to connect the **COMPUTER** terminal of this instrument to the RS232C terminal of a PC. Set the switch to **PC2**.

- The MIDI driver included with the cable should be installed in the computer. (Refer to the manual accompanying the cable.)
- Do not remove the core at either end of the cable.

* All product and company names are trademarks or registered trademarks of thier respective owners.

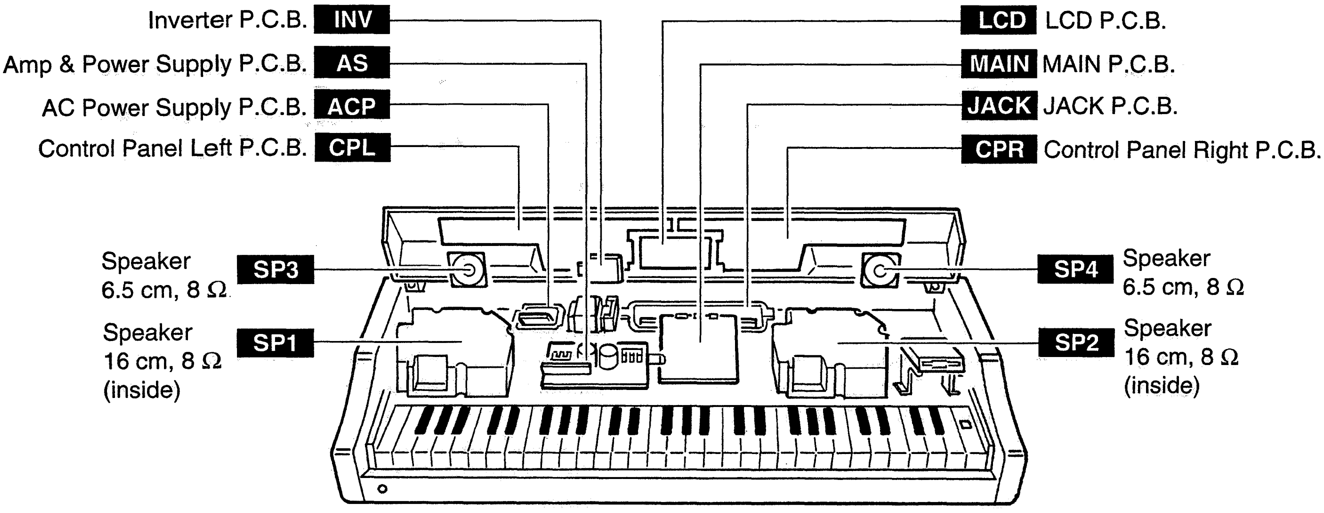
(beneath the left end of keyboard)



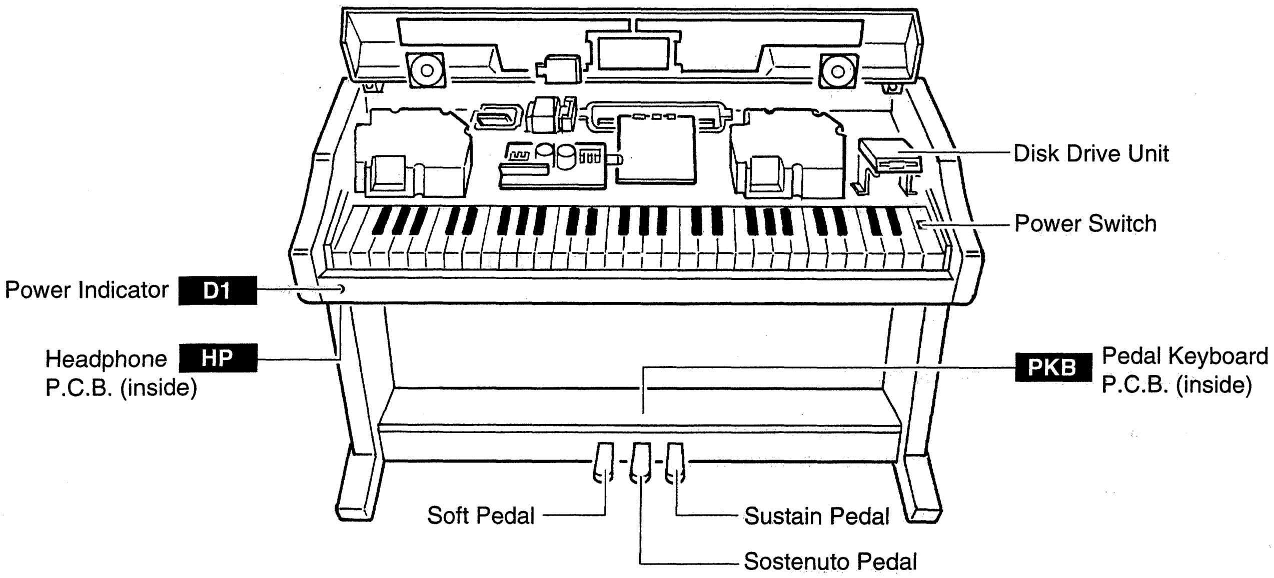
PHONES ×2
Headphones can be connected to this instrument.

- When headphones are plugged into this jack, the speakers of this instrument are disabled.

PARTS LOCATION


Inverter P.C.B. INV
Amp & Power Supply P.C.B. AS
AC Power Supply P.C.B. ACP
Control Panel Left P.C.B. CPL
LCD LCD P.C.B.
MAIN MAIN P.C.B.
JACK JACK P.C.B.
CPR Control Panel Right P.C.B.
Speaker 6.5 cm, 8 Ω SP3
Speaker 16 cm, 8 Ω (inside) SP1
SP4 Speaker 6.5 cm, 8 Ω
SP2 Speaker 16 cm, 8 Ω (inside)

[Fig. 1]

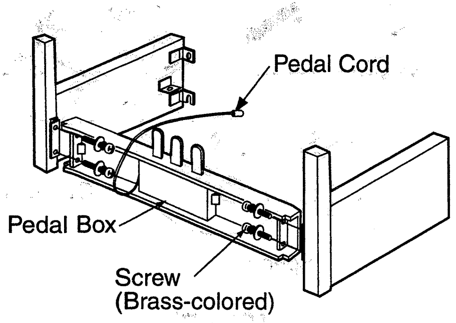

Disk Drive Unit
Power Switch
Power Indicator D1
Headphone HP P.C.B. (inside)
PKB Pedal Keyboard P.C.B. (inside)
Soft Pedal
Sustain Pedal
Sostenuto Pedal

[Fig. 2]

HOW TO ASSEMBLE THE PIANO

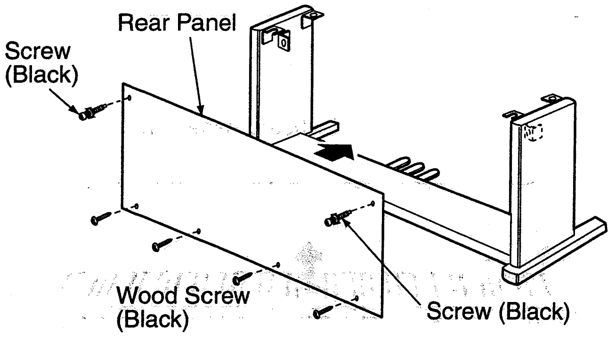
To prevent the piano unit from falling off the stand, secure it firmly with the screws.

1. Assemble the right and left side planks and the pedal box with the 4 brass-colored screws.
   - Loosen the pedal cord, stowed on the inner side of the pedal box, and extend it.


Pedal Cord
Pedal Box
Screw
(Brass-colored)

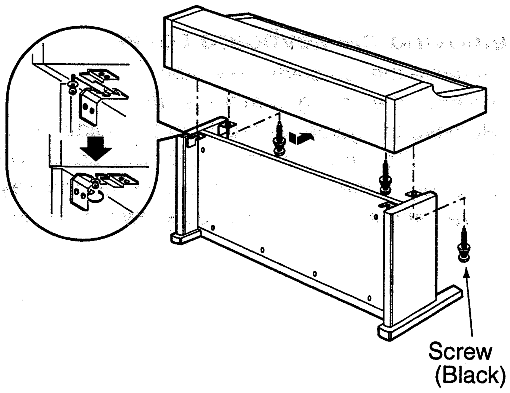
[Fig. 3]

2. Place the stand upright and mount the rear panel with 2 black screws and 4 black wood screws.


Rear Panel
Screw
(Black)
Wood Screw
(Black)
Screw (Black)

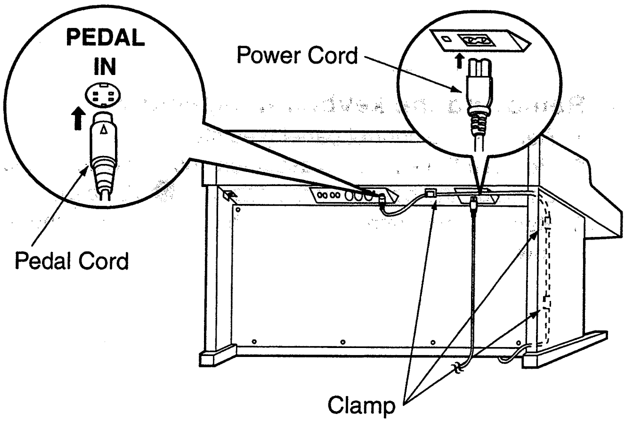
[Fig. 4]

3. Place the piano unit on the stand and secure it with 4 black screws.


Screw
(Black)

[Fig. 5]

4. Connect the pedal cord and power cord to the terminals located on the rear of the piano unit as shown below.


PEDAL
IN
Power Cord
Pedal Cord
Clamp

[Fig. 6]

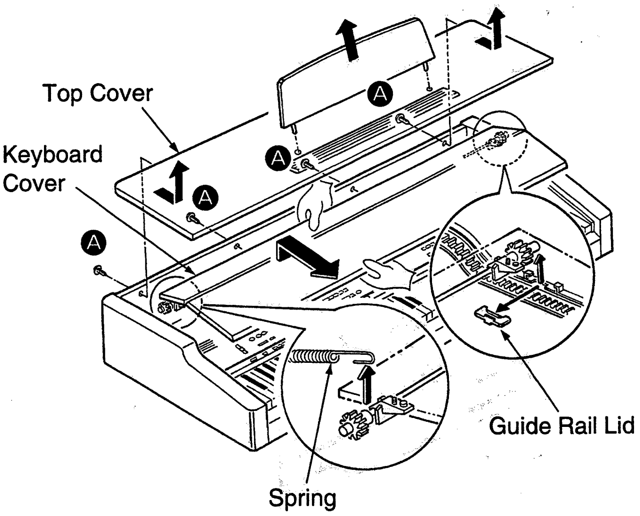
DISASSEMBLY INSTRUCTIONS

1 Removing the top cover

1. Remove the top cover mounting screws (Ⓐ 4 pcs.).
2. Lift up the top cover (as shown by the arrows).

2 Removing the keyboard cover

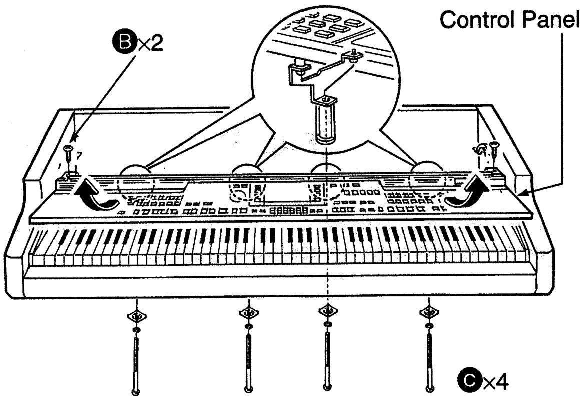
1. Remove the top cover (see step 1).
2. Release the spring from the shaft.
3. Remove the guide rail lids from the guide rails.
4. Match the gears of the keyboard cover with the notches in the guide rails and lift up the keyboard cover, and slide it forward (as shown by the arrow).



[Fig.7]

3 Removing the control panel

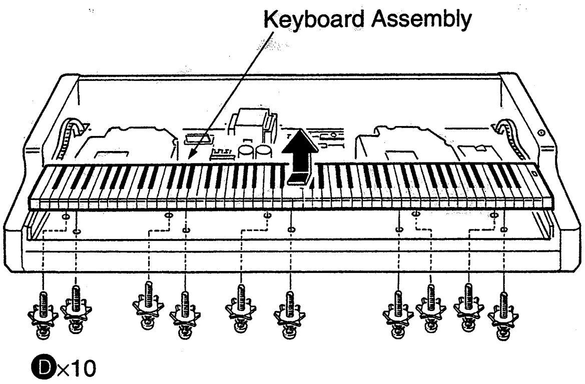
1. Remove the keyboard cover (see step 2).
2. Remove the control panel mounting screws (Ⓑ 2 pcs. and Ⓒ 4 pcs.).
3. Remove the control panel as shown by the arrows.



[Fig.8]

4 Removing the keyboard assembly

1. Remove the control panel (see step 3).
2. Remove the keyboard assembly mounting screws located on the bottom of the cabinet (Ⓓ 10 pcs.).
3. Remove the keyboard assembly as shown by the arrow.



[Fig.9]

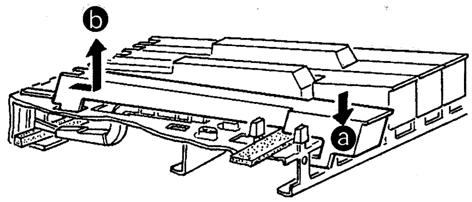
5 Key(s)

Disassembly

1. Remove the keyboard assembly (see step 4).
2. Release the key claw.
   ⓐ Press the front of the key downward slightly.
   ⓑ Press the rear of the key forward gently.
3. To remove the key, lift it as shown in Fig. 10.

NOTE:

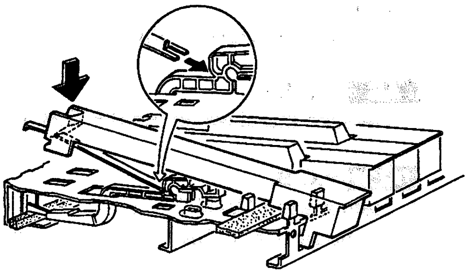
- The key claw is easily broken. Do not apply undue force. Should a key claw break, it can still be used; however, a replacement is recommended.
- If a black key is to be replaced, it is necessary to remove both adjacent white keys.



[Fig.10]

Assembly

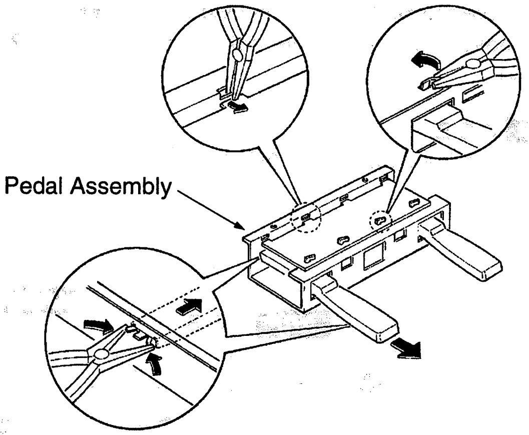
1. Insert the front part of the key into the chassis.
2. Insert the plate spring into the hammer notch as shown in Fig. 11.
3. While slowly lowering the key into the chassis, insert the plate spring into the notch at the rear of the key.
4. Carefully insert the key into the opening in the chassis and slide the key towards the rear to lock it in place.



[Fig.11]

6 Disassembly of the pedal assembly

1. Remove the pedal assembly from the pedal box.
2. Disassemble the pedal assembly as shown in Fig. 12.



[Fig.12]

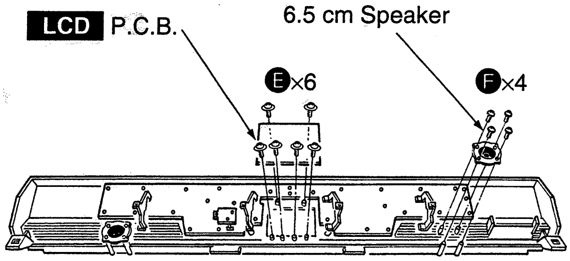
7 Removing the LCD P.C.B.

LCD P.C.B.

1. Remove the control panel (see step 3).
2. Remove the LCD P.C.B. mounting screws (Ⓔ 6 pcs.).

8 Removing the 6.5 cm speakers

1. Remove the control panel (see step 3).
2. Remove the 6.5 cm speaker mounting screws (Ⓕ 4pcs.).



[Fig.13]

9 Removing the MAIN, AS, JACK, HP, ACP P.C.B.

- Remove the keyboard cover (see step 2).
- Pull out the connectors on the printed circuit boards.

MAIN P.C.B.

1. Remove the shield cover mounting screws (Ⓟ 7 pcs.). Except for (M), (MC), (XM), (XS), (XD), (XT), (X), (XP) areas.
2. Remove the MAIN P.C.B. mounting screws (Ⓖ 2 pcs.).
3. Release the claws of the 3 P.C.B. holders.

AS P.C.B.

1. Release the claws of the 9 P.C.B. holders.

JACK P.C.B.

1. Remove the MAIN P.C.B.
2. Remove the JACK P.C.B. mounting screws (Ⓗ 4 pcs.).
3. Remove the ground wire mounting screws (Ⓘ 3 pcs.).

HP P.C.B.

1. Remove the keyboard assembly (see step 4).
2. Remove the HP P.C.B. mounting screws (Ⓙ 2 pcs.).
3. Remove the headphone jack mounting nuts (Ⓚ 2 pcs.).

ACP P.C.B.

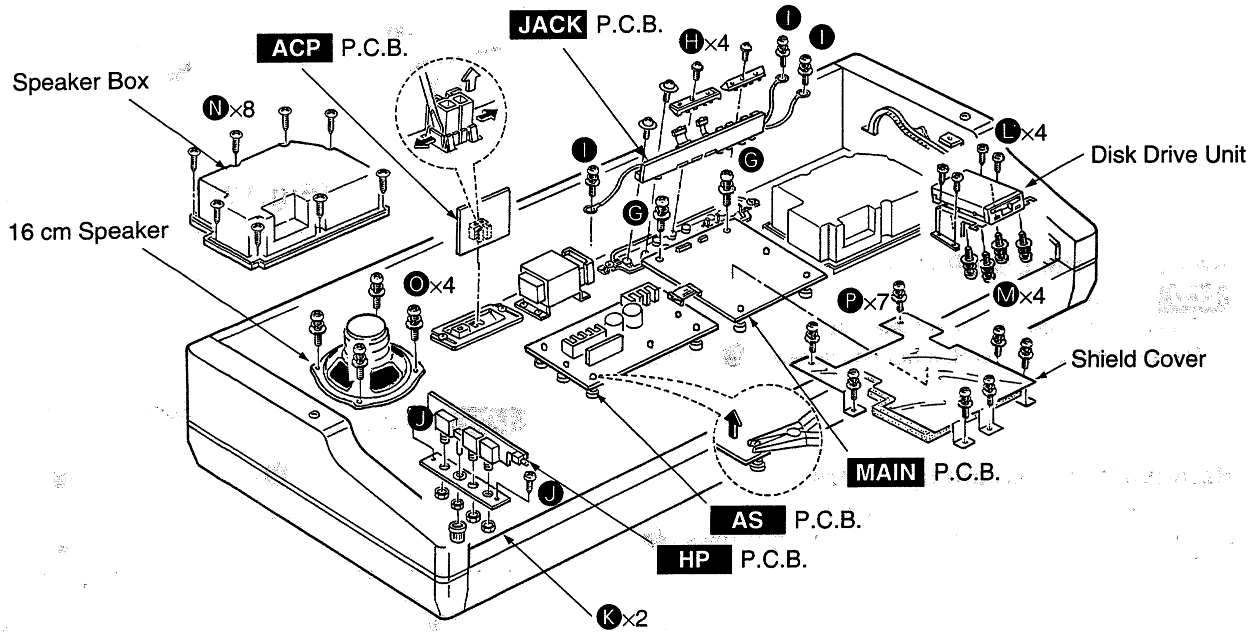
- Release the claws of the AC IN connector bracket.

10 Removing the Disk Drive unit

1. Remove the keyboard cover (see step 2).
2. Pull out the connector from the Disk Drive unit.
3. Remove the chassis on which Disk Drive unit is attached (Ⓛ 4 pcs.).
4. Remove the Disk Drive unit mounting screws (Ⓜ 4 pcs.).

11 Removing the 16 cm speakers

1. Remove the keyboard cover (see step 2).
2. Remove the speaker box mounting screws (Ⓝ 8 pcs.).
3. Remove the 16 cm speaker mounting screws (Ⓞ 4 pcs.).



[Fig.14]

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in this instrument but do not indicate trouble.

Phenomenon		Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three lower left buttons in the **RHYTHM GROUP** section (**SOUL & DISCO**, **BIG BAND & SWING** and **USA TRAD**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the balance buttons to set the volumes of the relevant parts to appropriate levels. • The part is muted. • The LOCAL CONTROL for a part performed on the keyboard is set to OFF. Set the LOCAL CONTROL to ON.
	Only percussive instrument sounds are produced when the keyboard is played.	• In the **SOUND GROUP** section, the **DRUM KITS** button is on.
	The volume is very low when the keyboard is played.	• The volume setting in the **SEQUENCER** contents is very low. Follow the INITIAL procedure to reset the settings.
	Some sounds cannot be selected.	• When the GENERAL MIDI status is set to ON, The sounds which can be selected and operation which can be executed are limited. Turn the GENERAL MIDI status OFF to return the instrument to its normal operation.
	The sound you hear is different from the sound you selected.	• This sometimes occurs when you play back **SEQUENCER** or **COMPOSER** data which was created on a different model, or when MIDI data is received from a connected instrument. Select the desired sounds again.
	The sustain does not work even when the sustain pedal is depressed.	• The sustain pedal is not connected. Connect the pedal cord firmly to the **PEDAL IN** terminal on the back of the instrument. • When the **SUSTAIN PEDAL** button is off, the sustain does not work even when the pedal is depressed. Turn on the **SUSTAIN PEDAL** button.
	The sostenuto pedal and soft pedal do not operate properly. For example, when the soft pedal is depressed, the rhythm starts or a fill-in is played.	• Different functions can be programmed in these pedals. You can return the pedals to their original functions by turning off the instrument once, or by using the PEDAL SETTING mode.

Phenomenon		Remedy
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the balance buttons to set the **DRUMS** volume to an appropriate level. • The Classic Ballad rhythm of the **BALLAD** group is selected. Use the **AUTO PLAY CHORD** in your performance. • A **SEQUENCER PLAY** button is on. When you are not playing back the **SEQUENCER** performance, turn off the **SEQUENCER PLAY** button. • CLOCK is set to MIDI. Set CLOCK to INTERNAL. • The rhythm does not work when the GENERAL MIDI mode is set to ON. Turn the GENERAL MIDI status OFF to return the instrument to its normal operation.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• An **ACCOMP** part does not sound if its corresponding volume is set to the minimum level. Use the respective balance buttons to set the **ACCOMP 1**, **2** and **3** volumes to appropriate levels.
SEQUENCER	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory.
	The playback measure indication is different from when the performance was recorded.	• The number of measures corresponds to the time signature of the rhythm selected at the start of recording. To change the rhythm in the middle of the song, record the rhythm change in the RHYTHM part.
COMPOSER	Storage is not possible.	• The remaining memory capacity of the **COMPOSER** is 0.
	Setting the time signature and number of measures is not possible.	• The time signature and number of measures cannot be changed for a pattern which is currently recorded in the **COMPOSER**. If you wish to change the time signature and/or measure data, first follow the procedure to clear the memory.
	The playback timing of the rhythm pattern is different from the timing with which it was recorded.	• The QUANTIZE function was on when the pattern was recorded and the timing was automatically corrected. Set the quantize level to a smaller note unit or to OFF when recording.

Phenomenon		Remedy
Disk Drive	The Disk Drive produces a noise during recording or playback.	• This occurs when the Disk Drive is reading a disk. It does not indicate a problem.
	When the procedure to load from a disk is performed, the contents of the instrument's memory are erased.	• When performing the load operation from a disk, this instrument's memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the instrument's memory, save it on a disk before performing the load procedure.
MIDI	Data cannot be exchanged through MIDI terminals.	• The switch for the **COMPUTER** terminal is not set to **MIDI**. Turn off the power to this instrument and set the switch to **MIDI**. • Match the channels on the transmitting side and the receiving side.
	The sound quavers or is distorted.	• When the **COMPUTER** terminal or both the **MIDI IN** and **OUT** terminals are connected to a computer, depending on the computer software the received data may be sent back to the instrument just as it is. Because of this the sound generated from the keys and the sound generated from the returned data are both produced, causing undesirable effects, such as the sounds canceling each other out, for example. In this case, either change the software settings to prevent received data from being returned, or set the MIDI LOCAL CONTROL to off.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

ERROR DISPLAY

No.	Contents
00	The data on the disk that you are using is for a different product.
01	An error has occurred while the disk was loading. Please try again!
02	There is no disk in the Disk Drive.
03	The file that you tried to load is empty.
05	An error has occurred while the disk was saving. Please try again!
06	The disk that you are using is write protected. Please remove the write protection and try again.
07	The disk that you are using is full. Please use another disk.
08	An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk.
10	The data is already copy protected.
15	The song you are trying to save is empty.
16	This STANDARD MIDI FILE is incompatible with the PR and cannot be loaded.
17	This is not a STANDARD MIDI FILE.
18	The timebase (PPQ resolution) that you tried to load is not 24/48/96/192/288/384 PPQ.
19	This is a FORMAT 1 MIDI FILE disk and cannot be played back.
20	A problem has occurred with your **SEQUENCER** Data. This might be due to a damaged or faulty disk.
21	Memory full
22	It is necessary to press PUNCH OUT to complete this procedure.
23	It is impossible to change the time signature because it has already been set in the existing tracks.
24	A rhythm track already exists. It is impossible to assign two tracks to rhythm.
25	It is only possible to change the velocity on a melody track.
26	It is only possible to merge melody tracks. Tracks such as rhythm, chord and control cannot be merged.
27	It is only possible to copy melody tracks. Tracks such as rhythm, chord and control cannot be copied.
28	This song is too long to be saved as a MIDI file.
29	The MIDI file that you have tried to load exceeds the memory capacity of this instrument and cannot be played. The **SEQUENCER** memory has been cleared.
30	It is not possible to change the time signature or measure length of a **COMPOSER** pattern after it has been recorded. If you want to proceed, you must first clear the entire **COMPOSER** pattern.
31	The time signature of the pattern from which you are copying is different from the **COMPOSER** memory that you are using. Either: Change the time signature of the **COMPOSER** memory or: Copy from a pattern that has the same time signature
32	Memory full
33	Select a Track before setting parameters for AUTO PUNCH RECORD.
43	The file that you are trying to load was saved on a previous KN keyboard. It is only possible to load using the "PERFORMANCE" option.
46	It is only possible to insert MELODY Tracks. Tracks such as RHYTHM, CHORD and CONTROL cannot be inserted.
47	This procedure is not possible with a composer pattern or the metronome. Please select a preset rhythm pattern.
54	Please select a USER bank.

No.	Contents
55	Special tracks such as CHORD (APC), RHY and CTL exist in the song from which you are copying and are incompatible with the destination song because it is in the GM mode.
56	AUTO PUNCH recording has been unsuccessful because **SEQUENCER** operation was interrupted before the PUNCH OUT measure was reached.
58	The song that you have tried to load exceeds this instrument's available memory and cannot be loaded. The selected song memory has been cleared. Please clear existing songs in the instrument's memory using SONG CLEAR to make more memory available, and try again.
59	RKB and LKB are special tracks for compatibility with SEQUENCER data from previous PR products. They cannot be edited or recorded on.
60	RKB and LKB are special tracks which cannot be used in conjunction with RIGHT 1, RIGHT 2, LEFT and APC tracks. Please re-assign RKB and LKB to any other part and try again.
62	The computer connection is not active because the computer port switch is set to MIDI. Please turn the power off, set the switch to the desired setting and turn the power back on.
64	Please select the Panel Memory that you want to name.
65	It is not possible to use the CHORD FINDER in this mode. Please select CHORD FINDER from HOME page or CHORD STEP RECORD page.
66	SOLO pads are special pads which include Chord information. Pleases use SOLO pads when the rhythm and accompaniment is playing.
67	There are no APC or CHORD tracks. Select and APC track or CHORD track, and try again.
68	It is not possible to record directly into the SOLO pads. Record on the SEQUENCER and Copy the melody and chord information into a SOLO pad.

ABOUT THE SELF-DIAGNOSTIC FUNCTION

This model has some self-diagnostic capabilities. There are two types of self-diagnostic functions: the "power on self-test" which runs a test when the power is turned on and notifies the user if an error is detected, and the "service mode" which is used when servicing the unit.

■ Power on self-test

This model runs the following self-diagnostic test when power is turned on. If an error is detected, a message is displayed on the LCD to notify the user.

Communication check between the Control Panel CPU (CPL P.C.B.: IC1/CPR P.C.B.: IC1) and the MAIN CPU (MAIN P.C.B.: IC6)

When power is turned on, the model checks communications between the MAIN CPU and each Control Panel CPU. If an error is detected, the following message is displayed on the LCD.

CAUTION!!

**** ERROR in CPU data transmission ****

Please try turning off and on again.
If this message appears again,
This unit needs repairing.

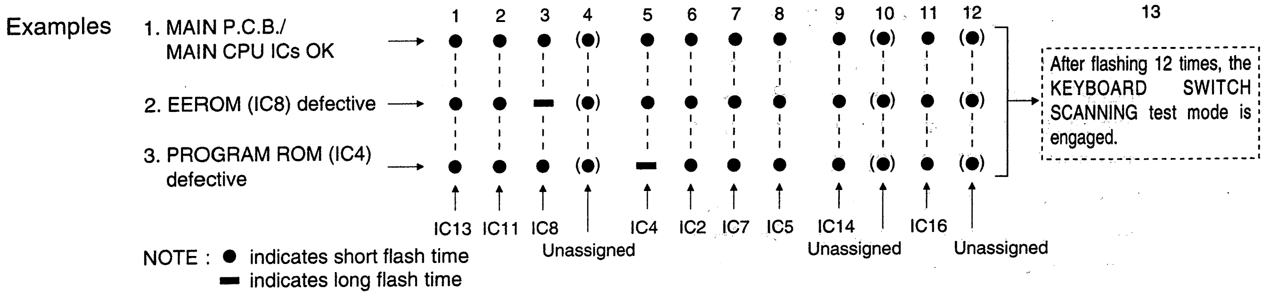
If this error occurs, perform the Control Panel CPU check from within the service mode. Using the self-diagnostic function, it is possible to determine which CPU (CPL/CPR P.C.B.) is suffering trouble.

■ Service mode

The service mode makes it possible to determine whether the various test modes pass or fail.
The test modes in the following table are presented in an order based on circuit operation, but they are completely independent of one another. Select a mode as necessary, and run the test or check.

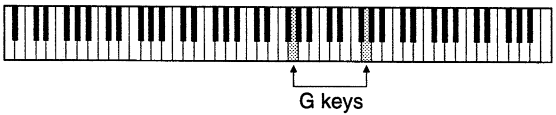
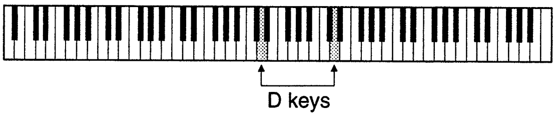
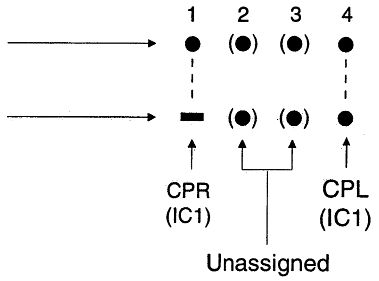
No.	Diagnostic Part/Diagnostic Device	Procedure of Service Mode
1	MAIN P.C.B.: MAIN CPU peripheral device 1. DRAM (IC13) 2. DRAM (IC11) 3. EEROM (IC8) 4. Unassigned 5. PROGRAM ROM (IC4) 6. PROGRAM ROM (IC2) 7. TABLE DATA ROM (IC7) 8. TABLE DATA ROM (IC5) 9. RHYTHM DATA ROM (IC14) 10. Unassigned 11. LCD CONTROLLER (IC16) 12. Unassigned	1. Connect the CHECKING DEVICE (refer to page I-20) to CN4 on the MAIN P.C.B.. 2. Turn on the power switch while holding down the CHECKING DEVICE switch.

When the power swich is turned on, the LED of the CHECKING DEVICE flashes 12 times . The order of the LED flashes corresponds to the IC number on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.

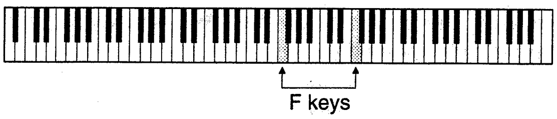

Examples
1 2 3 4 5 6 7 8 9 10 11 12 13
1. MAIN P.C.B./ MAIN CPU ICs OK
● ● ● (●) ● ● ● ● ● (●) ● (●)
2. EEROM (IC8) defective
● ● ▬ (●) ● ● ● ● ● (●) ● (●)
3. PROGRAM ROM (IC4) defective
● ● ● (●) ▬ ● ● ● ● (●) ● (●)
After flashing 12 times, the KEYBOARD SWITCH SCANNING test mode is engaged.
IC13 IC11 IC8 Unassigned IC4 IC2 IC7 IC5 IC14 Unassigned IC16 Unassigned
NOTE : ● indicates short flash time
▬ indicates long flash time

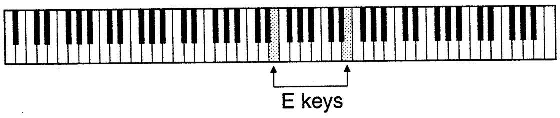
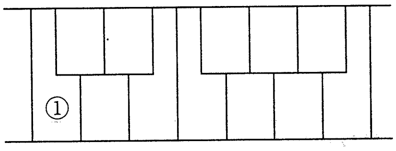
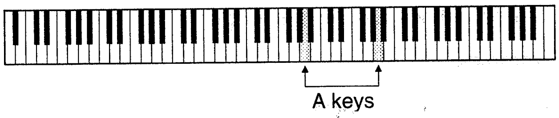
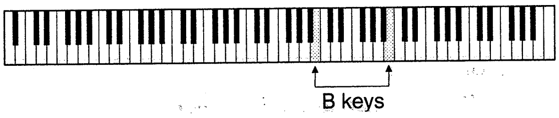
- **KEYBOARD SWITCH SCANNING test**

  When the power switch is turned on, the LED of the CHECKING DEVICE flashes 12 times and then engages the KEYBOARD SWITCH SCANNING test mode. (see the figure above.)
  Pressing any of the 88 keys will light the LED of the CHECKING DEVICE, while the LED will go out when the key is released. The KEYBOARD SWITCH SCANNING test determines whether the key switches and the Tone Generator LSI (MAIN P.C.B.: IC103) are working properly or not.

<table>
<tr><th>No.</th><th>Diagnostic Part/Diagnostic Device</th><th>Procedure of Service Mode</th></tr>
<tr><td rowspan="2">2</td><td>LCD test</td><td>Turn on the power switch while holding down the two G keys shown below.
 </td></tr>
<tr><td colspan="2">While the message "LCD PANEL TEST" is displayed on the LCD, the entire screen is repeatedly switched in the order of white → black → "H" pattern.
* "H" pattern is a big "H". It is used to check for crosstalk.</td></tr>
<tr><td rowspan="2">3</td><td>CPR/CPL P.C.B.:
1 chip Microcomputer (IC1) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-20) to CN4 on the MAIN P.C.B..
2. Turn on the power switch while holding down the CHECKING DEVICE switch and the two D keys shown below.
 </td></tr>
<tr><td colspan="2">When the power swich is turned on, the LED of the CHECKING DEVICE flashes 4 times . The order of the LED flashes corresponds to the Microcomputer (IC) number on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.
Examples
1. CPR (IC1), CPL (IC1) OK
2. CPR (IC1) defective, CPL (IC1) OK


1
2
3
4
● (●) (●) ●
▬ (●) (●) ●
CPR (IC1)
CPL (IC1)
Unassigned

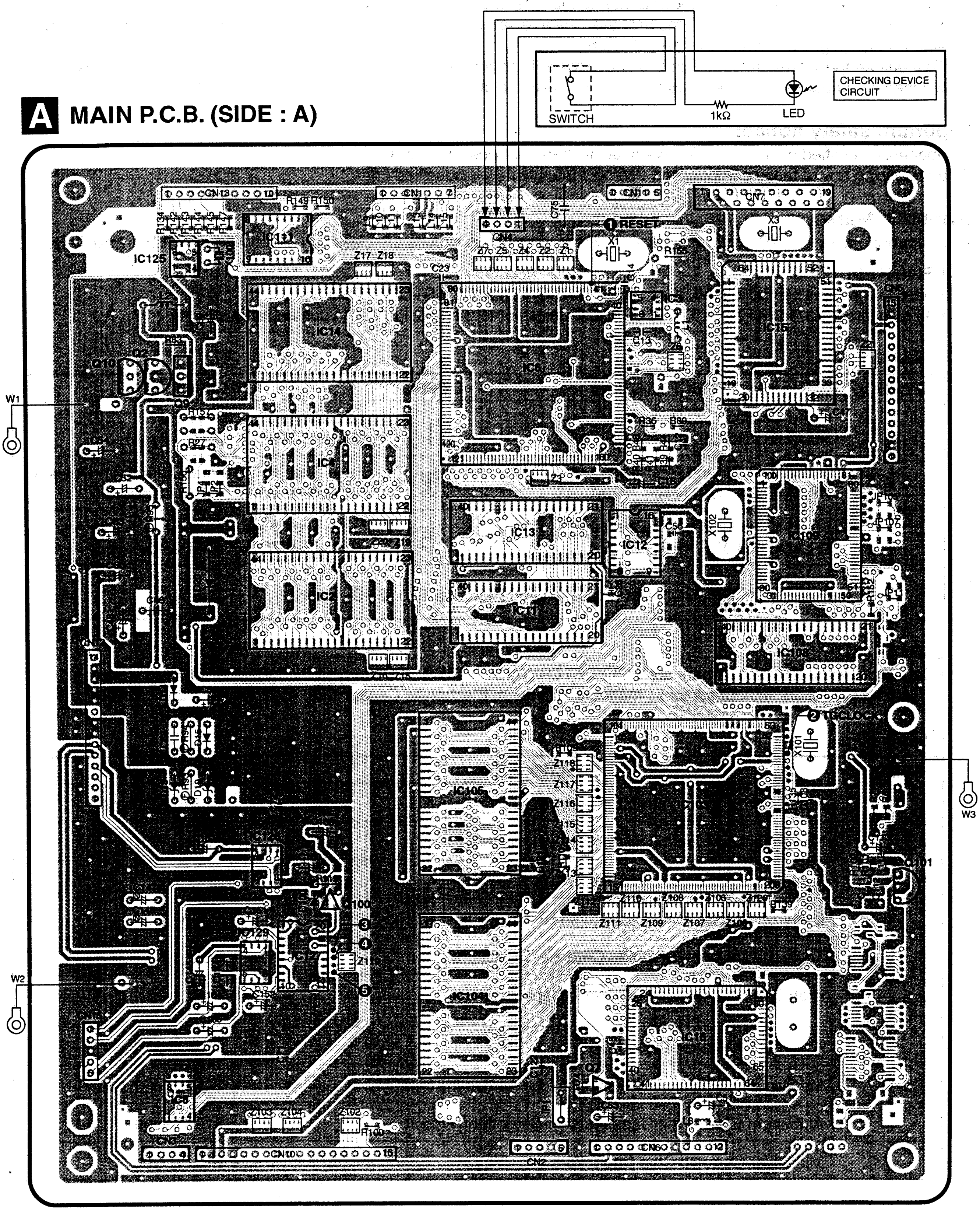
NOTE : ● indicates short flash time
▬ indicates long flash time
* The results of the above test are display on the LCD at the same time as well.</td></tr>
<tr><td rowspan="2">4</td><td>CPR/CPL P.C.B.:
Control Panel switch and LED check</td><td>Turn on the power switch while holding down the two F keys shown below.
 </td></tr>
<tr><td colspan="2">First, all of the LEDs on the Control Panel will light up simultaneously. Check that they do. Then, press the buttons on the Control Panel and confirm that the corresponding LED lights. For buttons without LEDs, the 4 BEAT display LEDs by the START/STOP button will light up simultaneously.
• To light up all of the LEDs on the Control Panel, press **DEMO** button.</td></tr>
</table>

<table>
<tr><th>No.</th><th>Diagnostic Part/Diagnostic Device</th><th>Procedure of Service Mode</th></tr>
<tr><td rowspan="2">5</td><td>MAIN P.C.B.:
Wave ROM (IC104-105) check</td><td>Turn on the power switch while holding down the two E keys shown below.

 </td></tr>
<tr><td>When set to the self-diagnostic mode, the Wave ROM output a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distored, the Wave ROM corresponding to the key is defective.
* A more detailed explanation as to setting conditions and other matters will be displayed on the LCD for your reference.</td><td>The key number indicates the Wave ROM number.
(①: IC104/105)

 </td></tr>
<tr><td rowspan="2">6</td><td>MAIN P.C.B.:
FDC IC (IC15) test</td><td>Turn on the power switch while holding down the two A keys shown below.

 </td></tr>
<tr><td colspan="2">The test results on the FDC IC will be displayed on the LCD.
NOTE: This test only checks communications between the FDC IC and MAIN CPU. It does not test operation of the FDC IC itself, the route from the FDC IC to Floppy Disk Drive operation.
To include the Floppy Disk Drive in testing, use the “Floppy Disk Drive SAVE/LOAD test” described below.</td></tr>
<tr><td rowspan="2">7</td><td>Floppy Disk Drive:
SAVE/LOAD test</td><td>1.Insert the floppy disk formatted into the Disk Drive.
2.Turn on the power switch while holding down the two B keys shown below.

 </td></tr>
<tr><td colspan="2">Pressing the button below the “ ▶ ” displayed on the LCD starts the Floppy Disk Drive SAVE/LOAD test. The test is carried out repeatedly.
Data is saved and loaded, and then the two data sets are compared. The number of times the test results “OK” or “NG” are counted and displayed on the LCD. To stop the test, press the button below the “ ■ ” displayed on the LCD.

Even when the Floppy Disk Drive is functioning properly, the test can result “NG”. If this happens frequently, clean the magnetic heads of the Floppy Disk Drive with a cleaning disk. Then, change the disk used in testing with another disk and reperform the test. If the trouble is not solved, it is likely that the Disk Drive unit or some other part of the hardware is broken.</td></tr>
</table>

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.

A MAIN P.C.B. (SIDE : A)


CHECKING DEVICE CIRCUIT
SWITCH
1kΩ
LED
CN4
❶ RESET
❷ TCLOCK
❸
❹
❺
W1
W2
W3
X1
X3
X101
X102
C75
CN13
CN1
CN11
CN7
CN2
CN3
CN10
CN6
CN15
IC125
IC111
IC14
IC4
IC2
IC6
IC15
IC13
IC12
IC11
IC109
IC108
IC105
IC104
IC129
IC10
Q100
Q101
Q10
Q2
Q7
R134
R149
R150
R155
R157
R27
R36
R100
Z17
Z18
Z7
Z5
Z4
Z2
Z1
Z118
Z117
Z116
Z115
Z111
Z110
Z109
Z108
Z107
Z106
Z105
Z103
Z104
Z102
C23
C13
C47
C58

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a “National Digital Storage Oscilloscope VP-5730A”. Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform illustration is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-19, No. 5). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture’s specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors “FLAME-PROOF” (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors “FLAME-PROOF” (ERX—type)
Ⓕ	Fixed Wire Wound Resistors “FLAME-PROOF” (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors “FLAME-PROOF” (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors “FLAME-PROOF” (ERG—type)	🄵	Fuse Type Fixed Carbon File Resistors “FLAME-PROOF” (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network system)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

PRECAUTIONS BEFORE SERVICING THE MAIN CIRCUIT

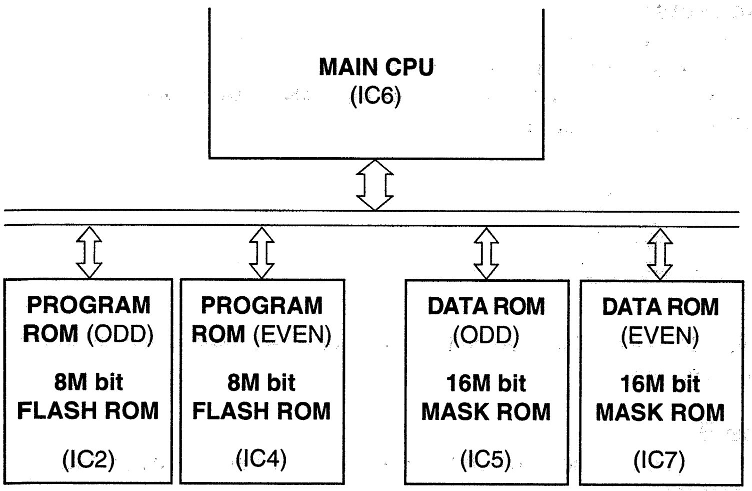
Note: In the initial production (over several months) of this model (Type A), FLASH ROMs (EEPROM) were used for the PROGRAM ROMs. In models produced thereafter (Type B), FLASH ROMs were not used. If changing any of these ICs, service the MAIN CIRCUIT as explained here following.

■ About the FLASH ROM

The FLASH ROM can be electrically erased and rewritten. This model is designed so that the repair technician can easily write and change programs and data in the FLASH ROM, by using a floppy disk.

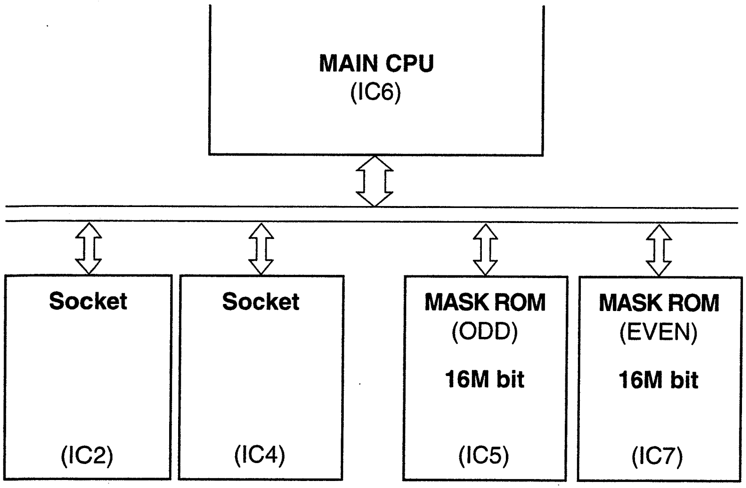
Block Diagram of MAIN CIRCUIT CPU and peripheral ICs

TYPE A


MAIN CPU
(IC6)
PROGRAM ROM (ODD)
8M bit FLASH ROM
(IC2)
PROGRAM ROM (EVEN)
8M bit FLASH ROM
(IC4)
DATA ROM (ODD)
16M bit MASK ROM
(IC5)
DATA ROM (EVEN)
16M bit MASK ROM
(IC7)

* FLASH ROM contents
IC2: MAIN CPU program (ODD)
IC4: MAIN CPU program (EVEN)

TYPE B


MAIN CPU
(IC6)
Socket
(IC2)
Socket
(IC4)
MASK ROM (ODD)
16M bit
(IC5)
MASK ROM (EVEN)
16M bit
(IC7)

■ How to distinguish Type A from Type B

While pressing **PANEL MEMORY** buttons **1**, **2** and **3** at the same time, turn the power on. The model type can be determined from the resulting display.

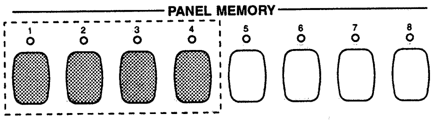
For Type A, “DEVICE=FLASH ROM” is shown on the display.
For Type B, “DEVICE=MASK ROM” is shown on the display.

■ Notes on replacing FLASH ROMs for Type A

The replacement parts include a FLASH ROM with a available memory and the "PROGRAM DISK" which contains the program to be written into the FLASH ROM. After replacing the FLASH ROM, always write the program into it from the floppy disk included in the replacement parts. For details on programming, see "How to write the program/data to the FLASH ROMs for Type A (or for Type B in which the FLASH ROMs has been installed in the sockets" below.

■ How to write the program/data to the FLASH ROMs for Type A (or for Type B in which the FLASH ROMs has been installed in the sockets)

① Load the "PROGRAM DISK" included in the replacement parts into the Floppy Disk Drive.
② Hold down the **PANEL MEMORY** buttons **1**, **2**, **3** and **4**, and turn on the power switch.
③ Check "Flash Memory Update" is displayed on the LCD. Only then, release the **PANEL MEMORY** buttons.
The program will be written into the FLASH ROM automatically.



④ When the operation is complete, "Completed!!" will be displayed on the LCD. Turn the power switch off and then back on again. Check the instrument is functioning properly.

■ How to write the program for Type B

Follow the steps below to write the program for Type B model in which the FLASH ROMs have not been installed.
① Install the FLASH ROMs in the unused sockets.
② Change the jumper wire settings as follows:
Discontinued: JP5, JP8, JP10
Added: JP6, JP7, JP9
③ Write the program/data in the same manner as for Type A, above.

MIDI IMPLEMENTATION CHART

Digital Ensemble [SX-PR602/PR602M] **(Transmitted)**

Function		RIGHT1,2,LEFT, PART4~15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note Number		0-119	0-127	0-119	0-119	0-119	0-127	0-119	–	Changes depending on the position of the transpose control,octave shift,and drums type.
	True voice	–	–	–	–	–	–	–	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	–	Transmitted during SEQUENCER playback.
	Ch's	○×*	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	Transmitted during SEQUENCER playback and during rhythm performance.
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	○×*	○×*	○×*	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	×	expression
	64	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	66	○	×	×	×	×	×	×	×	sostenuto
	67	○	×	×	×	×	×	×	×	soft
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	83	×	×	×	×	×	×	×	○×*	fade in/out
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	○×*	×	×	×	×	×	×	DSP effect
	94	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	95	○×*	○×*	×	×	×	×	×	○×*	piano ambience
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	×	×	×	×	×	×	all sound off
	121	○×*	○×*	×	×	×	×	×	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	–	–	–	–	–	–	–	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start/stop,continue
Aux Messages	Local ON/OFF	×	×	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	×	×	–	
	Active Sense	○								
	Reset	×								
Notes		○×*…………Whether or not the data for each of these items is transmitted can be set.								

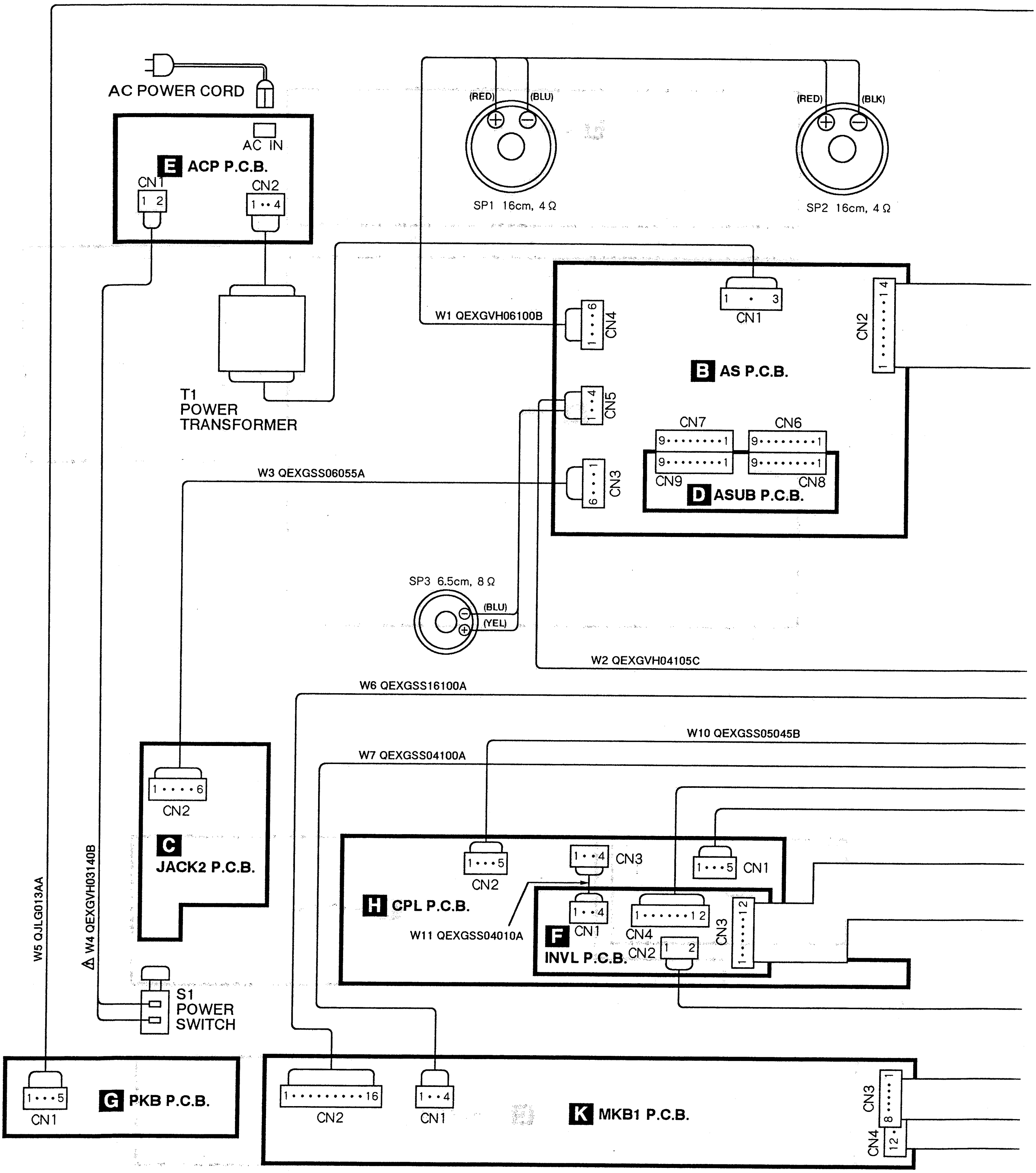
Mode 1:	OMNI ON, POLY	Mode 2:	OMNI ON, MONO	○:Yes
Mode 3:	OMNI OFF, POLY	Mode 4:	OMNI OFF, MONO	×:No

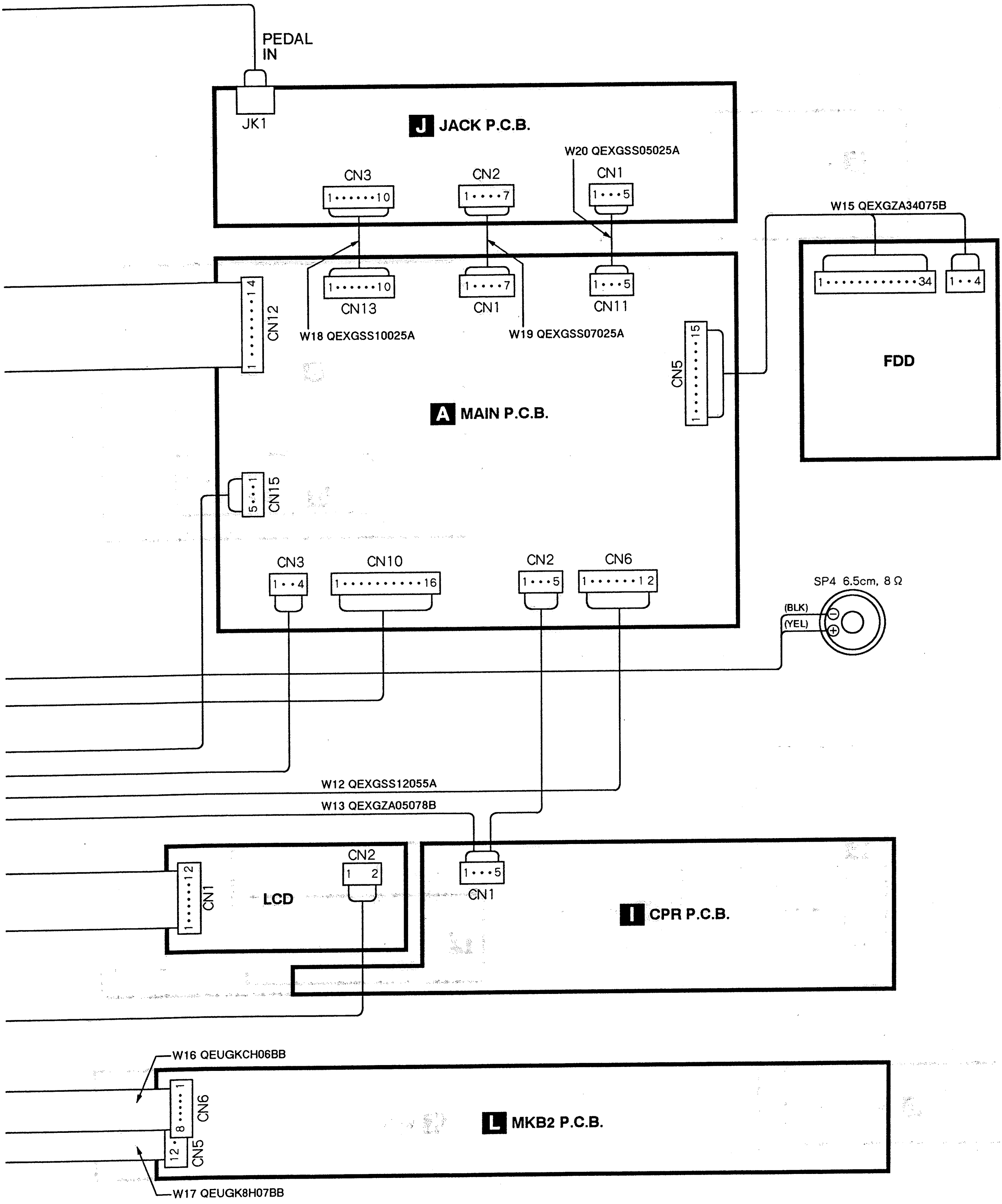
Digital Ensemble [SX-PR602/PR602M] **(Recognized)**

Function		RIGHT1,2,LEFT, PART4～15	PART16	ACMP1	ACMP2,3	BASS	DRUMS	CHORD	CONTROL	Remarks
Basic Channel	Default	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	memorized
	Changed	1-16	1-16	1-16	1-16	1-16	1-16	1-16	1-16	
Mode	Default	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	
Note Number		0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	Changes depending on the position of the transpose control,octave shift, and drums type.
	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
Velocity	Note ON	○	○	○	○	○	○	○	–	
	Note OFF	×	×	×	×	×	×	×	–	
After Touch	Key's	×	×	×	×	×	×	×	–	
	Ch's	○×*	×	×	×	×	×	×	–	
Pitch Bend		○×*	×	○×*	○×*	○×*	×	○×*	×	
Control Change	0,32	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	bank select MSB, LSB
	1	○×*	×	○×*	○×*	○×*	×	○×*	×	modulation
	6,38	○×*	×	×	×	×	×	×	×	data entry MSB, LSB
	7	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	volume
	10	○×*	×	○×*	○×*	○×*	×	×	×	panpot
	11	○×*	○×*	○×*	○×*	○×*	○×*	×	×	expression
	64	○×*	×	○×*	○×*	○×*	×	×	×	sustain
	66	○	×	×	×	×	×	×	×	sostenuto
	67	○	×	×	×	×	×	×	×	soft
	80	×	×	○×*	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	○×*	×	×	intro, fill in, ending
	83	×	×	×	×	×	×	×	○×*	fade in／out
	91	○×*	○×*	○×*	○×*	○×*	○×*	○×*	○×*	reverb
	93	○×*	○×*	×	×	×	×	×	×	DSP effect
	94	○×*	×	○×*	○×*	○×*	×	○×*	×	digital effect
	95	○×*	○×*	×	×	×	×	×	○×*	piano ambience
	100,101	○×*	×	×	×	×	×	×	×	RPN LSB, MSB
	120	○	○	○	○	○	○	○	×	all sound off
	121	○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	reset all cotrollers
Prog Change		○×*	○×*	○×*	○×*	○×*	○×*	○×*	×	Changes depending on program change mode and prog.cng to p.mem.
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	
System exclusive		○								
System common	Song Pos	○×*								
	Song Sel	○×* (0-19)								
	Tune	×								
System Real Time	Clock	○								
	Commands	○×*								start／stop,continue
Aux Messages	Local ON／OFF	×	×	×	×	×	×	×	–	
	All notes OFF	○	○	○	○	○	○	○	–	
	Active Sense	○								
	Reset	×								
Notes		○×*…………Whether or not the data for each of these items is received can be set.								

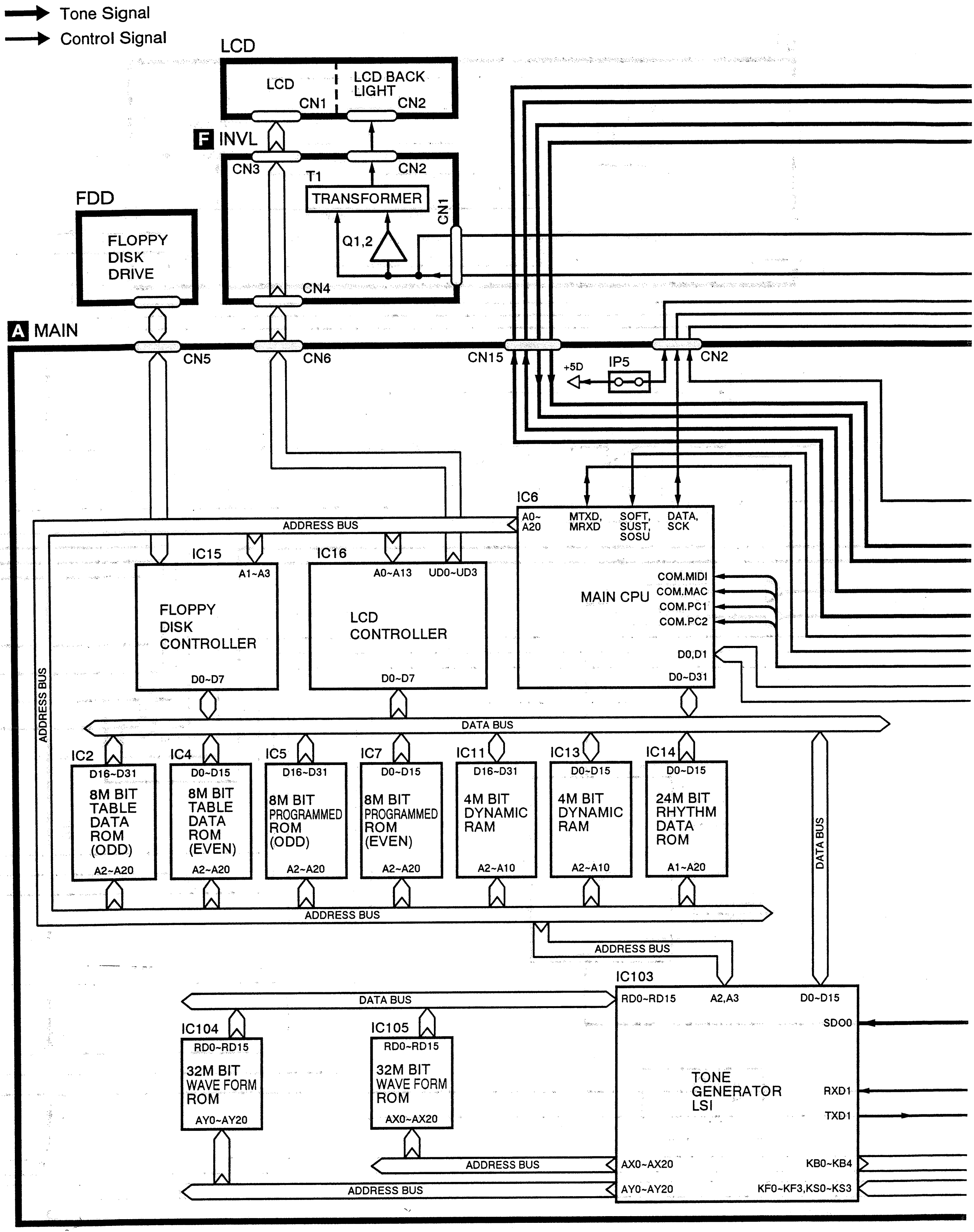
Mode 1:	OMNI ON, POLY	Mode 2:	OMNI ON, MONO	○:Yes
Mode 3:	OMNI OFF, POLY	Mode 4:	OMNI OFF, MONO	×:No

■WIRING CONNECTION Diagram

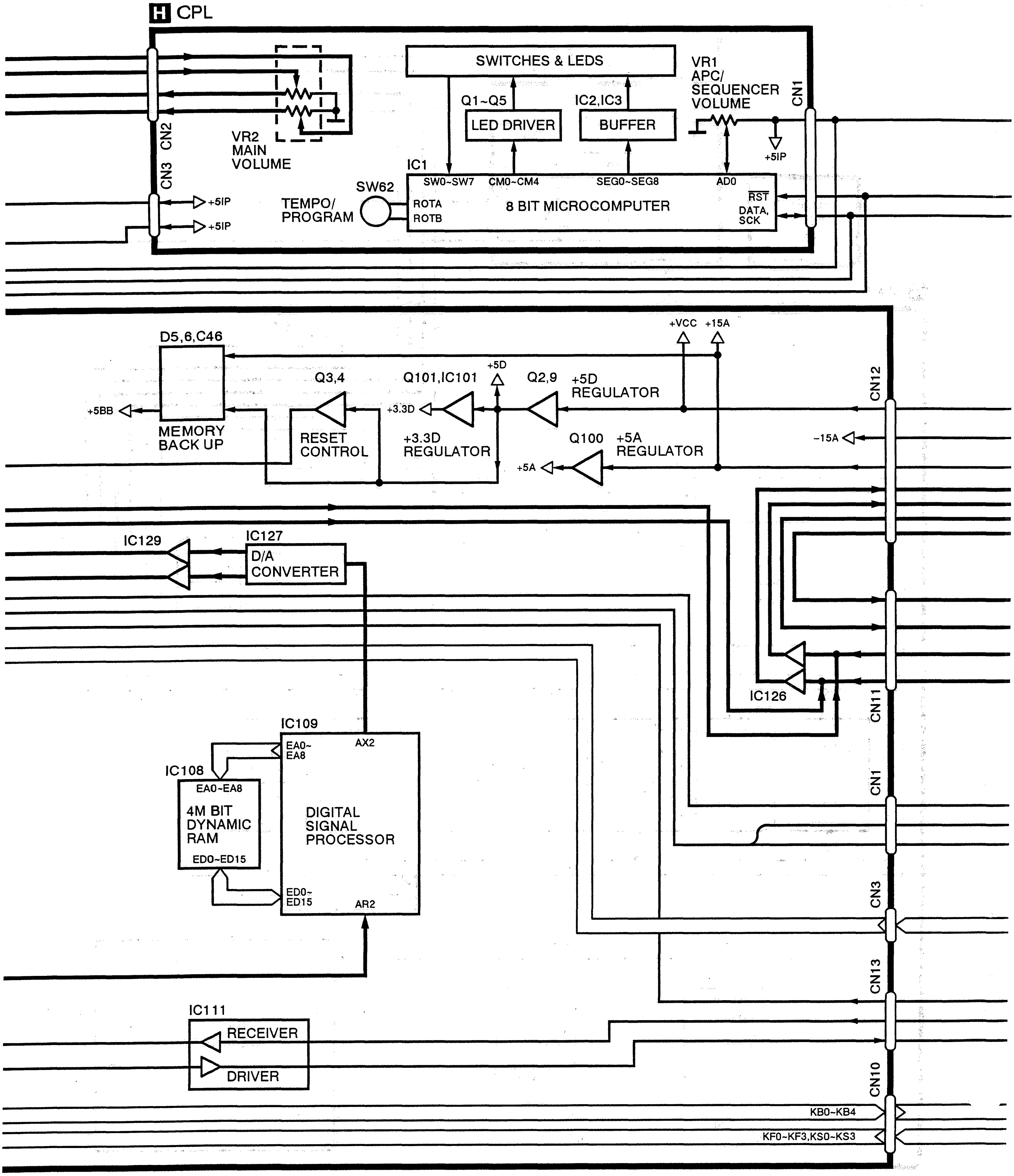

AC POWER CORD
AC IN
E ACP P.C.B.
CN1
1 2
CN2
1 • • 4
T1
POWER
TRANSFORMER
(RED)
(BLU)
SP1 16cm, 4 Ω
(RED)
(BLK)
SP2 16cm, 4 Ω
W1 QEXGVH06100B
CN4
1 • • • 6
CN1
1 • 3
CN2
1 • • • • • • • 1 4
B AS P.C.B.
CN5
1 • • 4
CN3
6 • • • 1
CN7
CN6
9 • • • • • • • • 1
CN9
CN8
D ASUB P.C.B.
W3 QEXGSS06055A
SP3 6.5cm, 8 Ω
(BLU)
(YEL)
W2 QEXGVH04105C
W6 QEXGSS16100A
W10 QEXGSS05045B
W7 QEXGSS04100A
1 • • • • 6
CN2
C
JACK2 P.C.B.
W5 QJLG013AA
W4 QEXGVH03140B
S1
POWER
SWITCH
1 • • • 5
CN2
1 • • 4
CN3
1 • • • 5
CN1
H CPL P.C.B.
W11 QEXGSS04010A
1 • • 4
CN1
1 • • • • • • • 1 2
CN4
CN2
1 2
CN3
1 • • • • • • • • 1 2
F
INVL P.C.B.
1 • • • 5
CN1
G PKB P.C.B.
1 • • • • • • • • • • 16
CN2
1 • • 4
CN1
K MKB1 P.C.B.
CN3
8 • • • • • 1
CN4
12 •

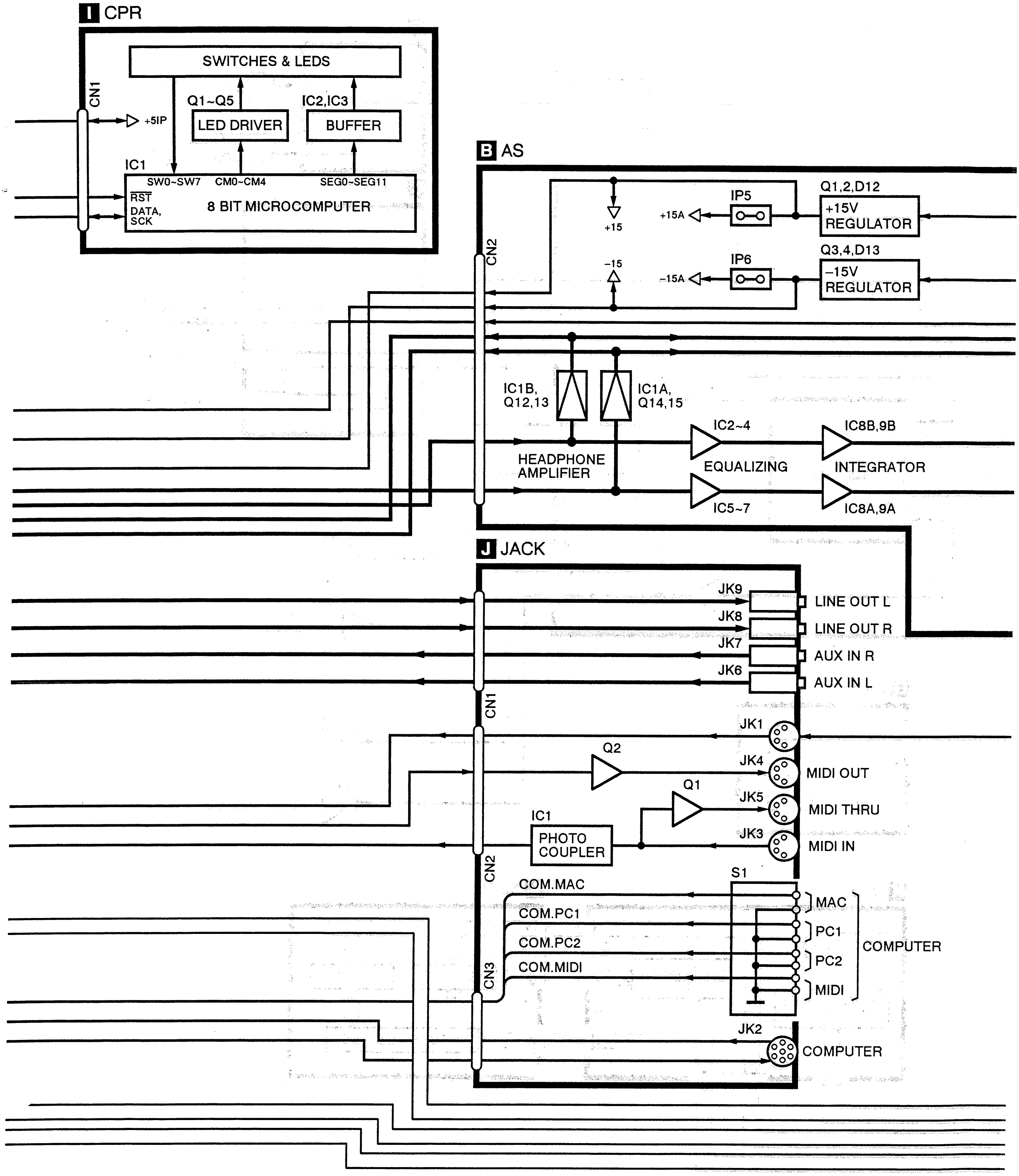

PEDAL IN
JK1
J JACK P.C.B.
W20 QEXGSS05025A
CN3
1••••••10
CN2
1••••7
CN1
1•••5
W15 QEXGZA34075B
1••••••••••••34
1••4
FDD
1••••••10
CN13
1••••7
CN1
1•••5
CN11
CN12
1••••••••14
W18 QEXGSS10025A
W19 QEXGSS07025A
CN5
1•••••••••••15
A MAIN P.C.B.
CN15
5•••1
CN3
1••4
CN10
1•••••••••••16
CN2
1•••5
CN6
1••••••12
SP4 6.5cm, 8 Ω
(BLK)
(YEL)
W12 QEXGSS12055A
W13 QEXGZA05078B
LCD
CN1
1••••••12
CN2
1 2
CN1
1•••5
I CPR P.C.B.
W16 QEUGKCH06BB
CN6
1••••8
CN5
12•
L MKB2 P.C.B.
W17 QEUGK8H07BB

BLOCK Diagram

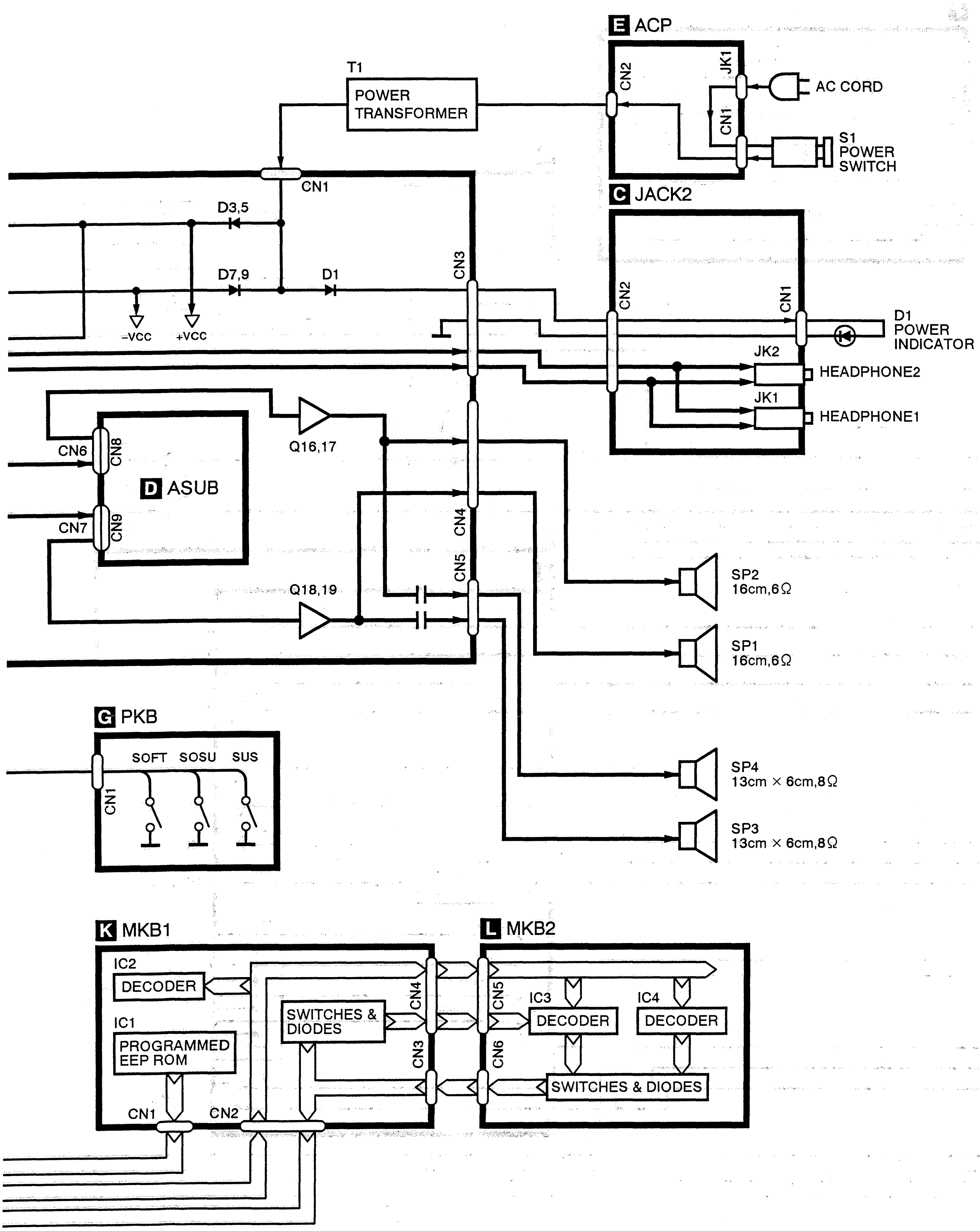


Tone Signal
Control Signal
LCD
LCD
CN1
LCD BACK LIGHT
CN2
F INVL
CN3
CN2
T1
TRANSFORMER
CN1
Q1,2
CN4
FDD
FLOPPY DISK DRIVE
A MAIN
CN5
CN6
CN15
+5D
IP5
CN2
IC6
A0~A20
MTXD, MRXD
SOFT, SUST, SOSU
DATA, SCK
MAIN CPU
COM.MIDI
COM.MAC
COM.PC1
COM.PC2
D0,D1
D0~D31
ADDRESS BUS
IC15
A1~A3
FLOPPY DISK CONTROLLER
D0~D7
IC16
A0~A13
UD0~UD3
LCD CONTROLLER
D0~D7
DATA BUS
IC2
D16~D31
8M BIT TABLE DATA ROM (ODD)
A2~A20
IC4
D0~D15
8M BIT TABLE DATA ROM (EVEN)
A2~A20
IC5
D16~D31
8M BIT PROGRAMMED ROM (ODD)
A2~A20
IC7
D0~D15
8M BIT PROGRAMMED ROM (EVEN)
A2~A20
IC11
D16~D31
4M BIT DYNAMIC RAM
A2~A10
IC13
D0~D15
4M BIT DYNAMIC RAM
A2~A10
IC14
D0~D15
24M BIT RHYTHM DATA ROM
A1~A20
ADDRESS BUS
DATA BUS
ADDRESS BUS
IC103
RD0~RD15
A2,A3
D0~D15
SDO0
TONE GENERATOR LSI
RXD1
TXD1
AX0~AX20
KB0~KB4
AY0~AY20
KF0~KF3,KS0~KS3
DATA BUS
IC104
RD0~RD15
32M BIT WAVE FORM ROM
AY0~AY20
IC105
RD0~RD15
32M BIT WAVE FORM ROM
AX0~AX20
ADDRESS BUS
ADDRESS BUS


H CPL
SWITCHES & LEDS
Q1~Q5
LED DRIVER
IC2,IC3
BUFFER
VR1
APC/
SEQUENCER
VOLUME
CN1
+5IP
CN2
VR2
MAIN
VOLUME
CN3
+5IP
+5IP
SW62
TEMPO/
PROGRAM
IC1
SW0~SW7
CM0~CM4
SEG0~SEG8
AD0
ROTA
ROTB
8 BIT MICROCOMPUTER
RST
DATA,
SCK
+VCC
+15A
D5,6,C46
+5BB
MEMORY
BACK UP
Q3,4
RESET
CONTROL
Q101,IC101
+3.3D
+3.3D
REGULATOR
+5D
Q2,9
+5D
REGULATOR
Q100
+5A
REGULATOR
+5A
CN12
−15A
IC129
IC127
D/A
CONVERTER
IC126
CN11
IC109
EA0~
EA8
AX2
IC108
EA0~EA8
4M BIT
DYNAMIC
RAM
ED0~ED15
DIGITAL
SIGNAL
PROCESSOR
ED0~
ED15
AR2
CN1
CN3
CN13
IC111
RECEIVER
DRIVER
CN10
KB0~KB4
KF0~KF3,KS0~KS3

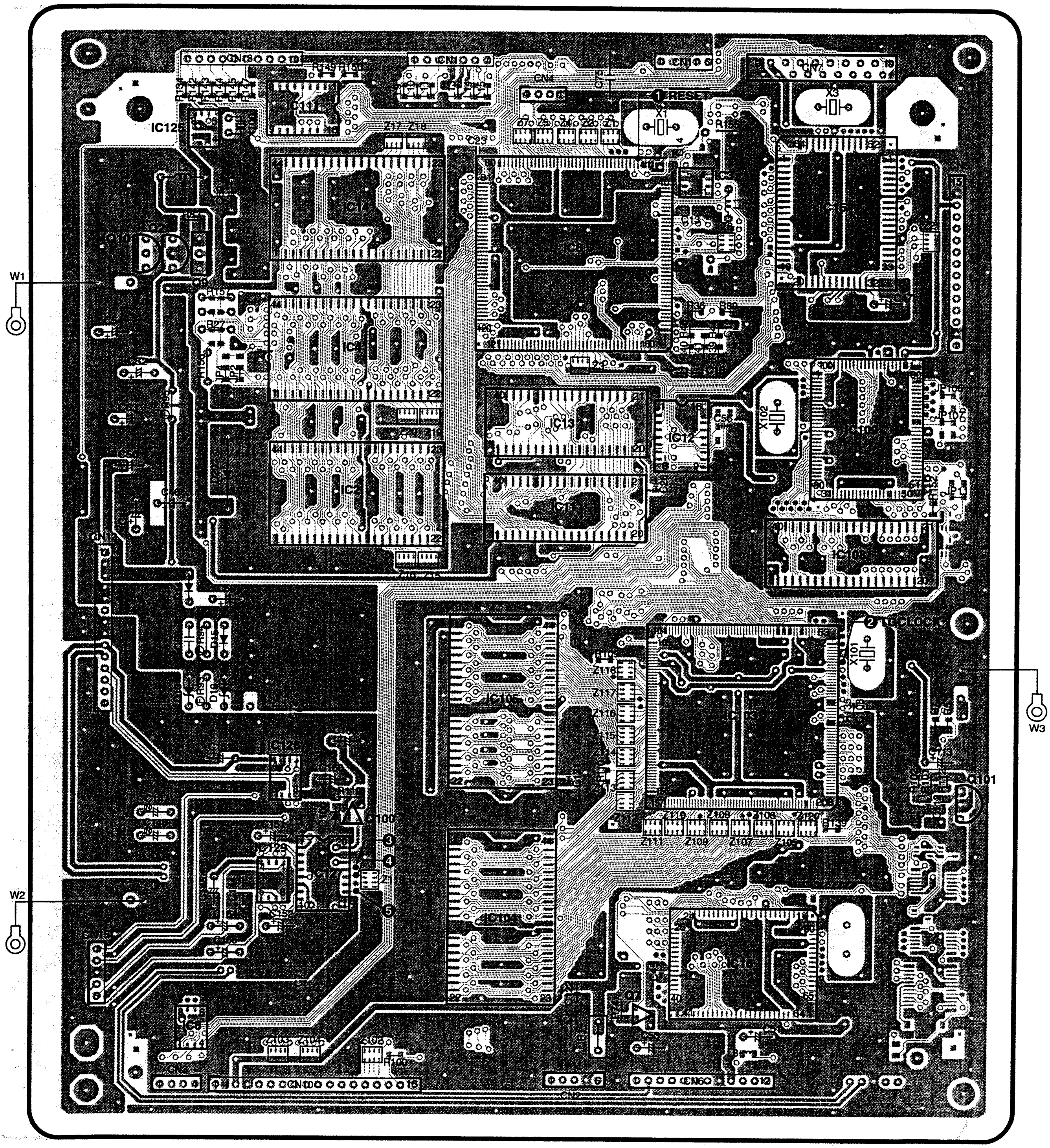


I CPR
CN1
+5IP
SWITCHES & LEDS
Q1~Q5
LED DRIVER
IC2,IC3
BUFFER
IC1
SW0~SW7
CM0~CM4
SEG0~SEG11
RST
DATA,
SCK
8 BIT MICROCOMPUTER
B AS
CN2
+15
+15A
IP5
Q1,2,D12
+15V
REGULATOR
-15
-15A
IP6
Q3,4,D13
-15V
REGULATOR
IC1B,
Q12,13
IC1A,
Q14,15
HEADPHONE
AMPLIFIER
IC2~4
EQUALIZING
IC8B,9B
INTEGRATOR
IC5~7
IC8A,9A
J JACK
JK9
LINE OUT L
JK8
LINE OUT R
JK7
AUX IN R
JK6
AUX IN L
CN1
JK1
Q2
JK4
MIDI OUT
Q1
JK5
MIDI THRU
IC1
PHOTO
COUPLER
JK3
MIDI IN
CN2
S1
COM.MAC
COM.PC1
COM.PC2
COM.MIDI
CN3
MAC
PC1
PC2
MIDI
COMPUTER
JK2
COMPUTER


E ACP
T1
POWER TRANSFORMER
CN2
JK1
CN1
AC CORD
S1
POWER SWITCH
CN1
D3,5
D7,9
D1
-VCC
+VCC
CN3
C JACK2
CN2
CN1
D1
POWER INDICATOR
JK2
HEADPHONE2
JK1
HEADPHONE1
CN6
CN8
D ASUB
CN7
CN9
Q16,17
Q18,19
CN4
CN5
SP2
16cm,6Ω
SP1
16cm,6Ω
G PKB
SOFT
SOSU
SUS
CN1
SP4
13cm × 6cm,8Ω
SP3
13cm × 6cm,8Ω
K MKB1
IC2
DECODER
IC1
PROGRAMMED EEP ROM
SWITCHES & DIODES
CN4
CN3
CN1
CN2
L MKB2
CN5
CN6
IC3
DECODER
IC4
DECODER
SWITCHES & DIODES

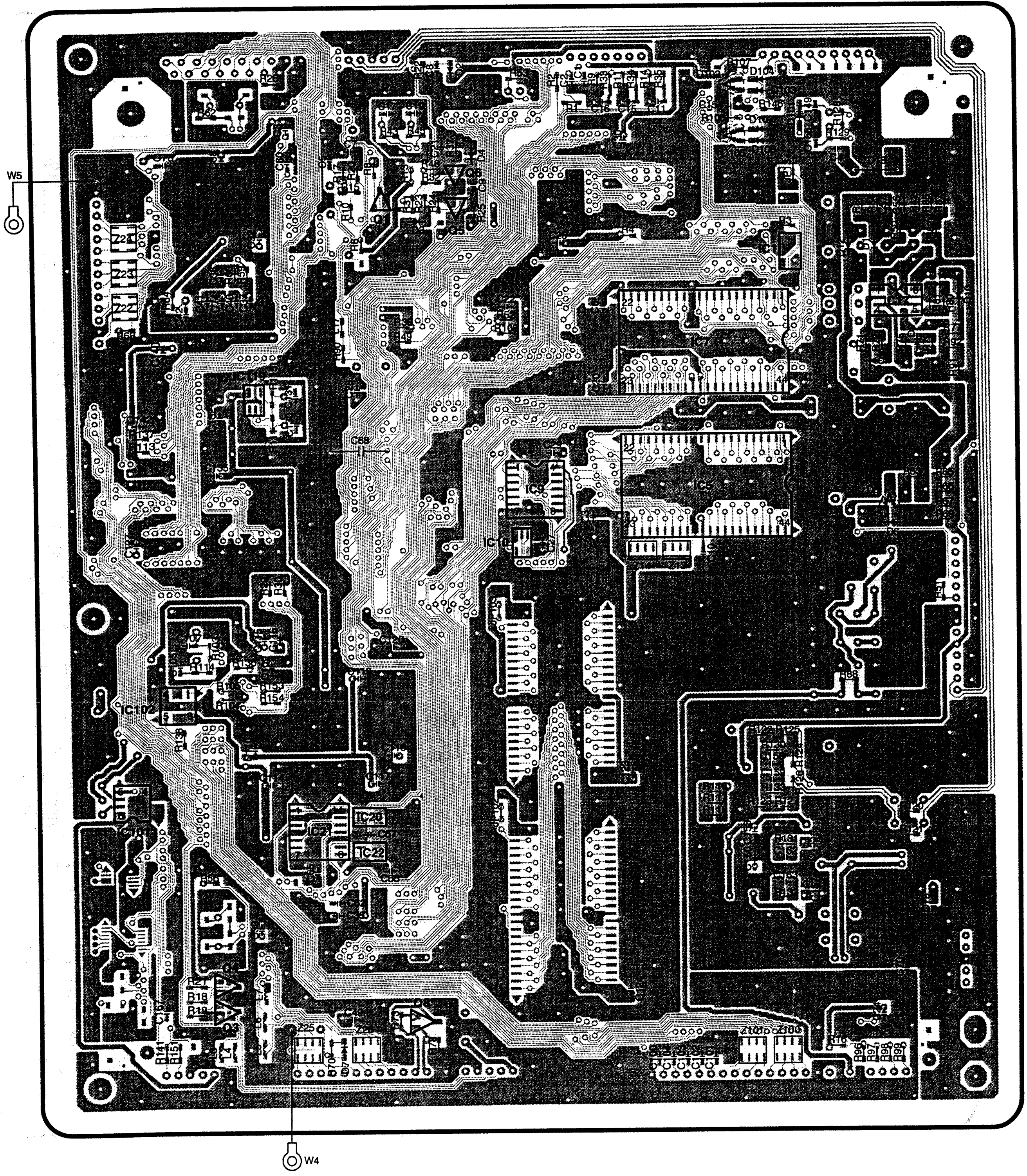
■Printed Circuit Board and Schematic Diagram

A MAIN P.C.B. (SIDE : A)



W1
W2
W3
1 RESET
2 CLOCK
X1
X3
X101
X102
IC125
IC126
IC12
IC13
IC11
IC103
IC105
IC108
Q101
Q100
CN1
CN2
CN3
CN4
CN60
Z17
Z18
Z116
Z117
Z118
Z107
Z108
Z109
Z111
3
4
5

A MAIN P.C.B. (SIDE : B)

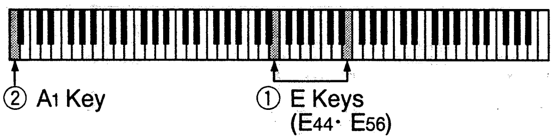

W5
W4
IC5
IC9
IC10
IC20
IC22
C58
C7
Z21
Z22
Z23
Z25
R18
R19
R129
R154
D101

■ Measuring Condition of MAIN P.C.B.

Check Point ❸~❺

Set to the self-diagnostic mode followings.

- While pressing two E keys (①) simultaneously, turn on the power switch.
- SOUND .... SYNTH
- Main Volume .... MAX
- Keyboard .... A_1 (②)

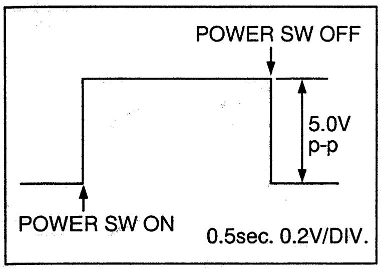

② A1 Key
① E Keys
(E44· E56)

Check Point ❶

Set the initial setting mode (Refer to page I-5)

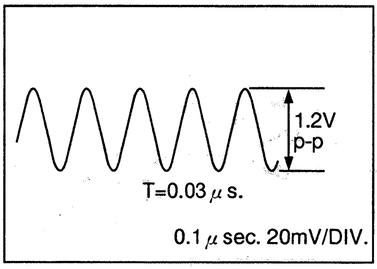
- SOUND .... SYNTH
- Main Volume .... MAX

❶ $\overline{\text{RESET}}$

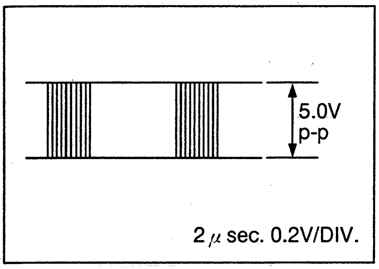

POWER SW OFF
5.0V
p-p
POWER SW ON
0.5sec. 0.2V/DIV.

- Power SW .... ON → OFF

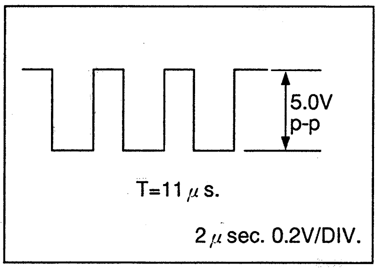
❷ TG CLOCK


1.2V
p-p
T=0.03 μ s.
0.1 μ sec. 20mV/DIV.

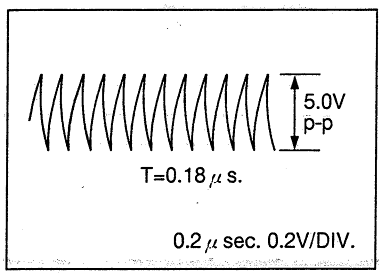
❸


5.0V
p-p
2 μ sec. 0.2V/DIV.

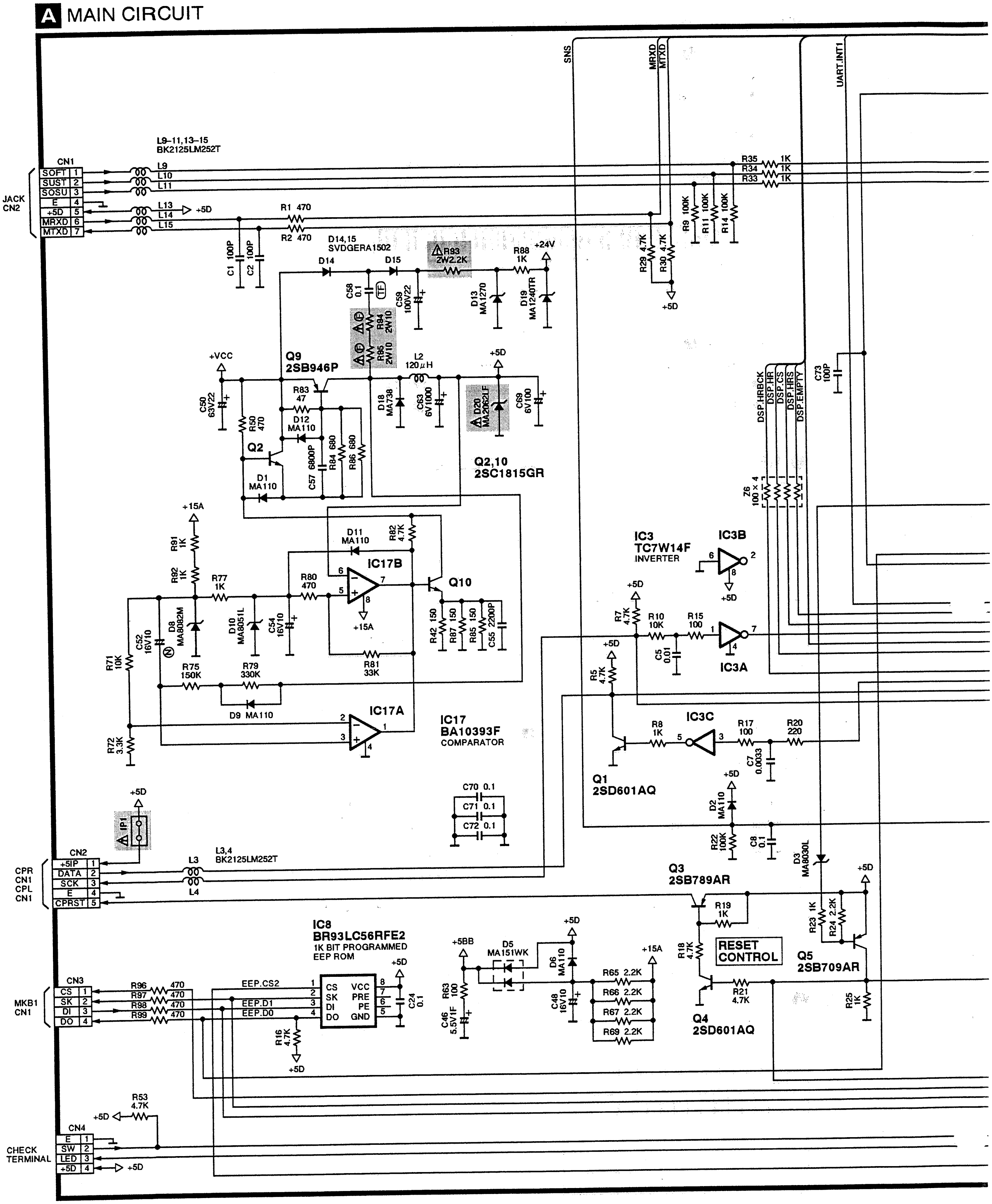
❹


5.0V
p-p
T=11 μ s.
2 μ sec. 0.2V/DIV.

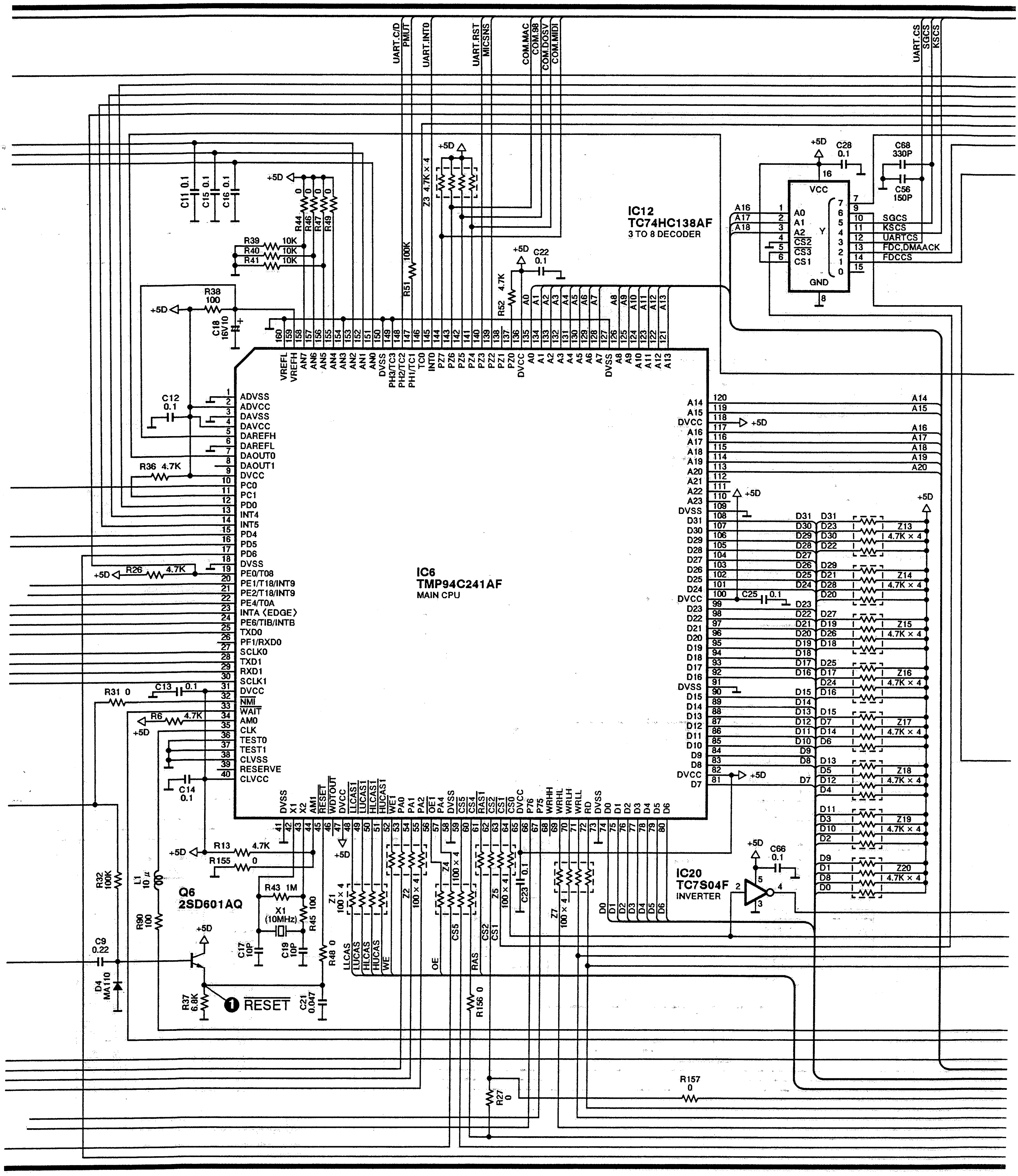
❺

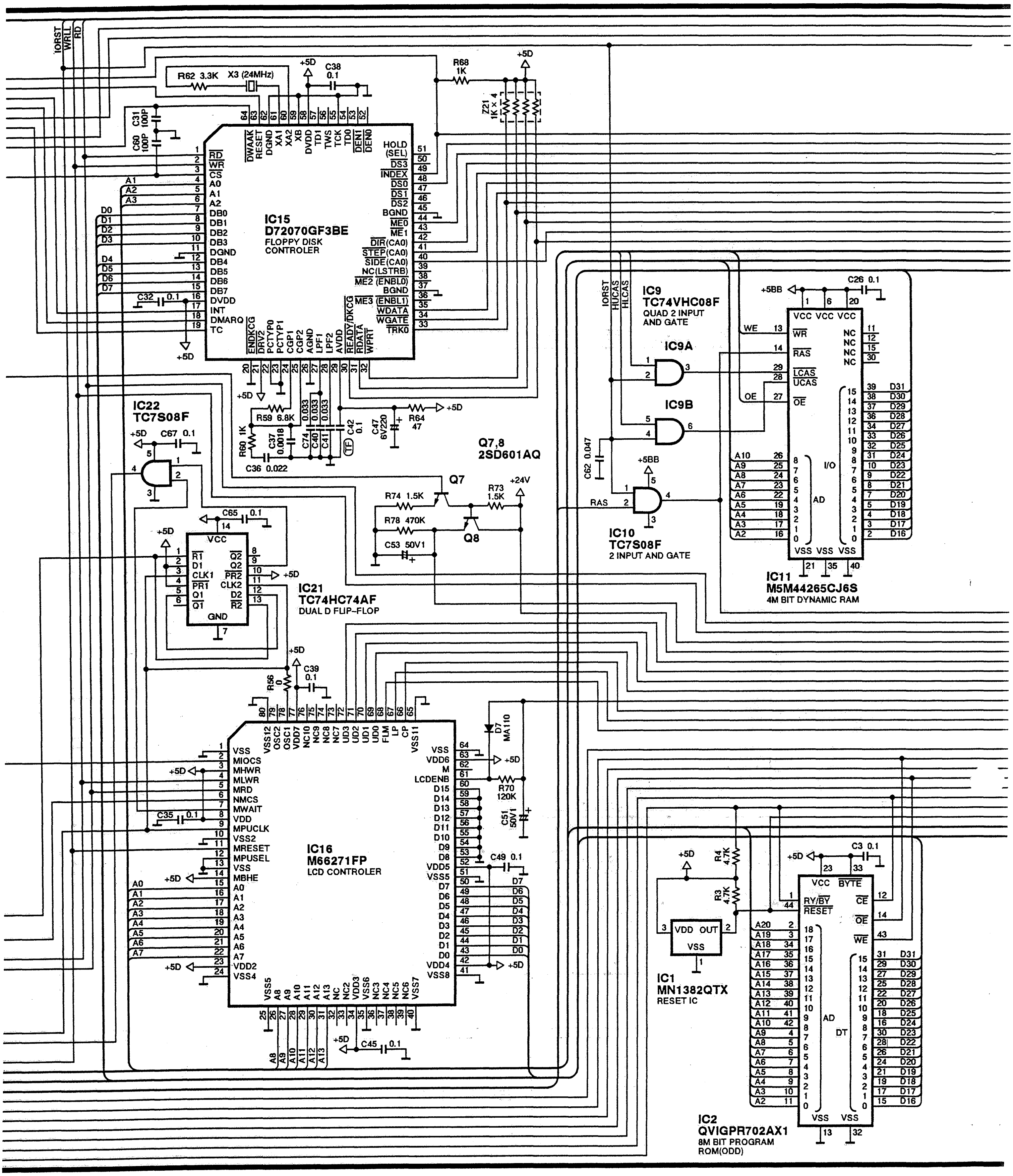

5.0V
p-p
T=0.18 μ s.
0.2 μ sec. 0.2V/DIV.

A MAIN CIRCUIT

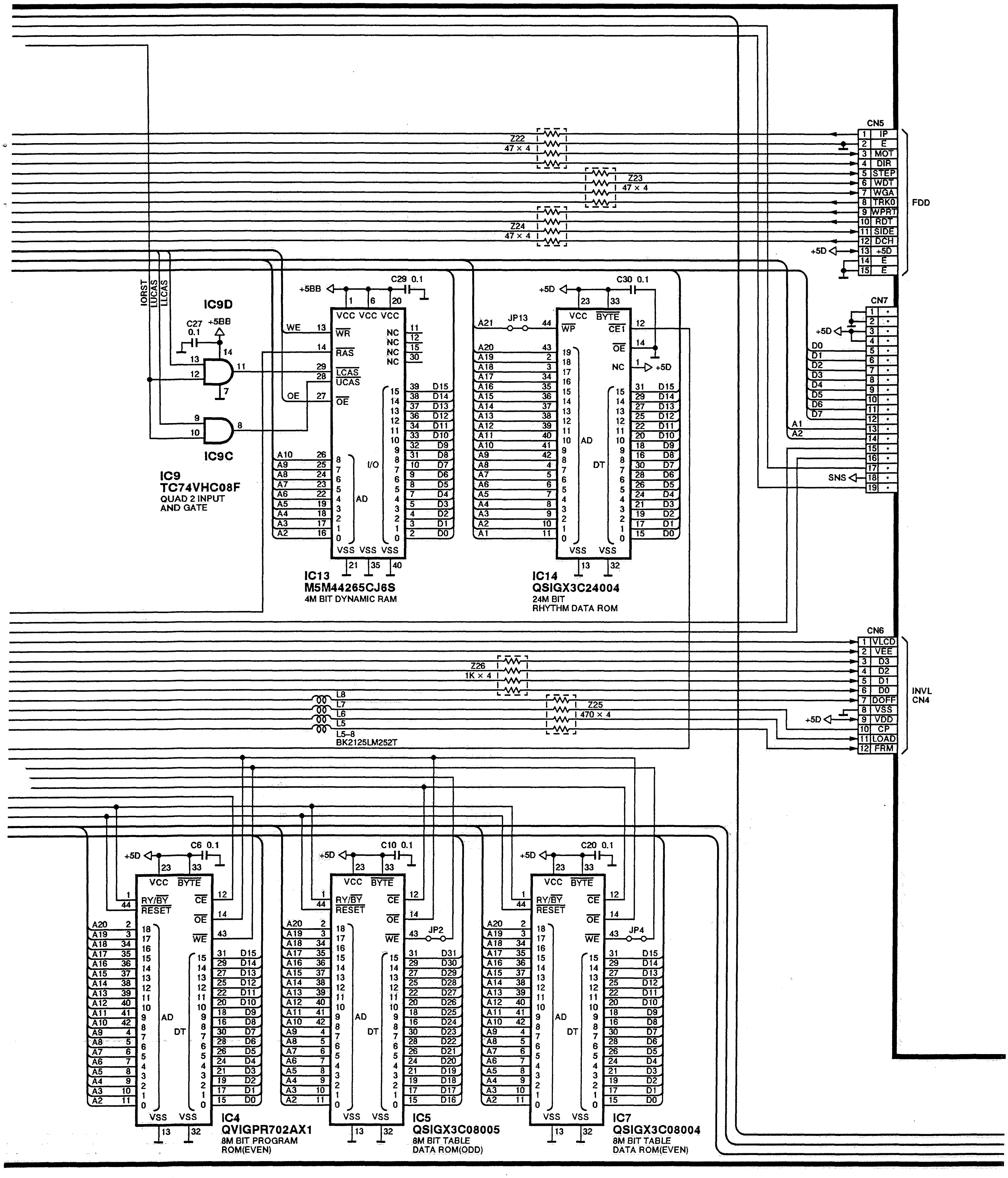


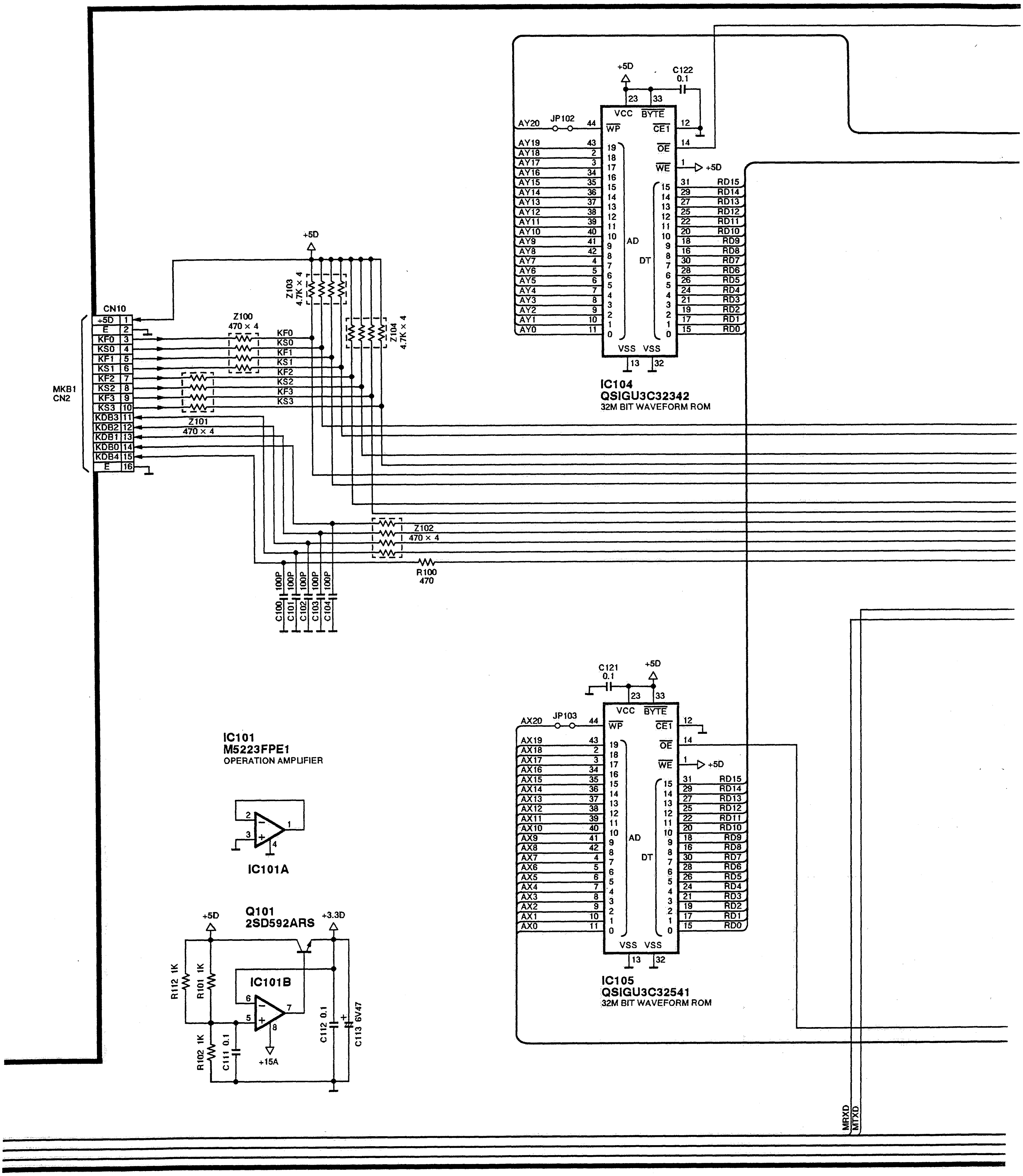
SNS
MRXD
MTXD
UART.INT1
L9-11,13-15
BK2125LM252T
CN1
SOFT 1
SUST 2
SOSU 3
E 4
+5D 5
MRXD 6
MTXD 7
JACK CN2
L9
L10
L11
L13
L14
L15
+5D
R1 470
R2 470
C1 100P
C2 100P
D14,15
SVDGERA1502
D14
D15
R93 2W2.2K
R88 1K
+24V
C58 0.1
TF
C59 100V22
R84 2W10
R85 2W10
D13 MA1270
D19 MA1240TR
R35 1K
R34 1K
R33 1K
R9 100K
R11 100K
R14 100K
R29 4.7K
R30 4.7K
+5D
+VCC
Q9
2SB946P
L2
120μH
+5D
C50 63V22
R50 470
R83 47
D12 MA110
D18 MA738
C63 6V1000
D20 MA2062LF
C69 6V100
Q2
C57 6800P
R84 680
R86 680
D1 MA110
Q2,10
2SC1815GR
DSP.HRBCK
DSP.HR
DSP.CS
DSP.HRS
DSP.EMPTY
C73 100P
Z6 100×4
+15A
R91 1K
R92 1K
R77 1K
D11 MA110
R82 4.7K
IC17B
R80 470
Q10
D8 MA8082M
D10 MA8051L
C54 16V10
+15A
R42 150
R87 150
R85 150
C55 2200P
C52 16V10
R71 10K
R75 150K
R79 330K
R81 33K
D9 MA110
IC17A
IC17
BA10393F
COMPARATOR
R72 3.3K
IC3
TC7W14F
INVERTER
IC3B
+5D
R7 4.7K
R10 10K
R15 100
C5 0.01
IC3A
+5D
R5 4.7K
R8 1K
IC3C
R17 100
R20 220
C7 0.0033
Q1
2SD601AQ
+5D
D2 MA110
R22 100K
C8 0.1
C70 0.1
C71 0.1
C72 0.1
+5D
IP1
CN2
+5IP 1
DATA 2
SCK 3
E 4
CPRST 5
CPR CN1
CPL CN1
L3
L4
L3,4
BK2125LM252T
D3 MA8030L
Q3
2SB789AR
+5D
R19 1K
R23 1K
R24 2.2K
R18 4.7K
RESET CONTROL
Q5
2SB709AR
R21 4.7K
Q4
2SD601AQ
R25 1K
IC8
BR93LC56RFE2
1K BIT PROGRAMMED
EEP ROM
CN3
CS 1
SK 2
DI 3
DO 4
MKB1 CN1
R96 470
R97 470
R98 470
R99 470
EEP.CS2
EEP.D1
EEP.D0
CS
SK
DI
DO
VCC
PRE
PE
GND
+5D
C24 0.1
R16 4.7K
+5D
+5BB
D5
MA151WK
+5D
D6 MA110
+15A
R63 100
C46 5.5V1F
C48 16V10
R65 2.2K
R66 2.2K
R67 2.2K
R69 2.2K
R53 4.7K
+5D
CN4
E 1
SW 2
LED 3
+5D 4
CHECK TERMINAL
+5D

UART.C/D
PMUT
UART.INT0
UART.RST
MICSNS
COM.MAC
COM.98
COM.DOSV
COM.MIDI
UART.CS
SGCS
KSCS
IC6
TMP94C241AF
MAIN CPU
IC12
TC74HC138AF
3 TO 8 DECODER
IC20
TC7S04F
INVERTER
Q6
2SD601AQ
RESET
X1 (10MHz)
C11 0.1
C15 0.1
C16 0.1
C12 0.1
C13 0.1
C14 0.1
C17 10P
C19 10P
C18 16V10
C21 0.047
C22 0.1
C23 0.1
C25 0.1
C28 0.1
C66 0.1
C68 330P
C56 150P
C9 0.22
D4 MA110
L1 10μ
R38 100
R39 10K
R40 10K
R41 10K
R44 0
R46 0
R47 0
R49 0
R51 100K
R52 4.7K
R36 4.7K
R26 4.7K
R31 0
R6 4.7K
R13 4.7K
R155 0
R43 1M
R45 100
R48 0
R32 100K
R90 100
R37 6.8K
R156 0
R27 0
R157 0
Z1 100×4
Z2 100×4
Z3 4.7K×4
Z4 100×4
Z5 100×4
Z7 100×4
Z13 4.7K×4
Z14 4.7K×4
Z15 4.7K×4
Z16 4.7K×4
Z17 4.7K×4
Z18 4.7K×4
Z19 4.7K×4
Z20 4.7K×4
+5D
ADVSS
ADVCC
DAVSS
DAVCC
DAREFH
DAREFL
DAOUT0
DAOUT1
DVCC
PC0
PC1
PD0
INT4
INT5
PD4
PD5
PD6
DVSS
PE0/T08
PE1/T18/INT9
PE2/T18/INT9
PE4/T0A
INTA (EDGE)
PE6/TIB/INTB
TXD0
PF1/RXD0
SCLK0
TXD1
RXD1
SCLK1
NMI
WAIT
AM0
CLK
TEST0
TEST1
CLVSS
RESERVE
CLVCC
VREFL
VREFH
AN7
AN6
AN5
AN4
AN3
AN2
AN1
AN0
PH3/TC3
PH2/TC2
PH1/TC1
TC0
INT0
PZ7
PZ6
PZ5
PZ4
PZ3
PZ2
PZ1
PZ0
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
A22
A23
D0
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D30
D31
X1
X2
AM1
WDTOUT
LLCAS1
LUCAS1
HLCAS1
HUCAS1
WE1
PA0
PA1
PA2
OE1
PA4
CS5
CS4
RAS1
CS2
CS1
CS0
P76
P75
WRHH
WRHL
WRLH
WRLL
RD
LLCAS
LUCAS
HLCAS
HUCAS
WE
OE
RAS
VCC
GND
Y
CS2
CS3
CS1
SGCS
KSCS
UARTCS
FDC,DMAACK
FDCCS

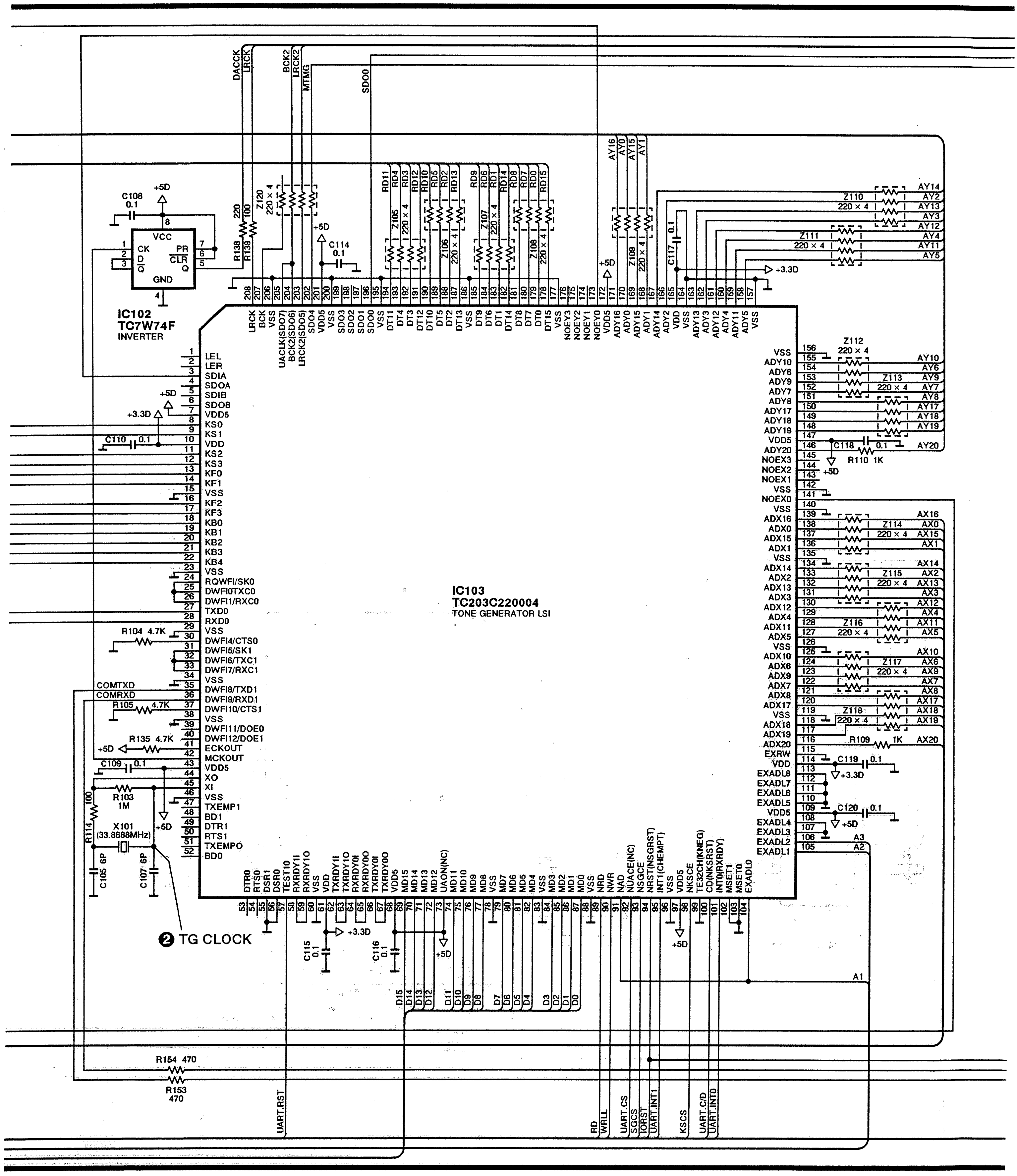


IORST
WRLL
RD
R62 3.3K
X3 (24MHz)
+5D
C38 0.1
R68 1K
Z21 1K x 4
C31 100P
C60 100P
IC15
D72070GF3BE
FLOPPY DISK CONTROLER
RD
WR
CS
A0
A1
A2
DB0
DB1
DB2
DB3
DGND
DB4
DB5
DB6
DB7
DVDD
INT
DMARQ
TC
DWAAK
RESET
DGND
XA1
XA2
XB
DVDD
TD1
TWS
TCK
TD0
DEN1
DEN0
HOLD (SEL)
DS3
INDEX
DS0
DS1
DS2
BGND
ME0
ME1
DIR(CA0)
STEP(CA0)
SIDE(CA0)
NC(LSTRB)
ME2 (ENBL0)
BGND
ME3 (ENBL1)
WDATA
WGATE
TRK0
ENDKCG
DRV2
PCTYP0
PCTYP1
CGP1
CGP2
AGND
LPF1
LPF2
AVDD
READY/DKCG
RDATA
WPRT
C32 0.1
R59 6.8K
R60 1K
C37 0.0018
C36 0.022
C74 0.033
C40 0.033
C41 0.033
C42 0.1
C47 6V220
R64 47
TP
IC22
TC7S08F
C67 0.1
Q7,8
2SD601AQ
Q7
Q8
R74 1.5K
R73 1.5K
R78 470K
C53 50V1
+24V
C65 0.1
IC21
TC74HC74AF
DUAL D FLIP-FLOP
VCC
R1
D1
CLK1
PR1
Q1
Q1
Q2
Q2
PR2
CLK2
D2
R2
GND
C39 0.1
R56 0
IC16
M66271FP
LCD CONTROLER
VSS
MIOCS
MHWR
MLWR
MRD
NMCS
MWAIT
VDD
MPUCLK
VSS2
MRESET
MPUSEL
VSS
MBHE
VDD2
VSS4
VSS12
OSC2
OSC1
VDD7
NC10
NC9
NC8
NC7
UD3
UD2
UD1
UD0
FLM
LP
CP
VSS11
VDD6
M
LCDENB
D15
D14
D13
D12
D11
D10
D9
D8
VDD5
VSS5
VDD4
VSS8
VSS5
NC2
VDD3
VSS6
NC3
NC4
NC5
NC6
VSS7
C35 0.1
C45 0.1
C49 0.1
D7 MA110
R70 120K
C51 50V1
IC9
TC74VHC08F
QUAD 2 INPUT AND GATE
IC9A
IC9B
HUCAS
HLCAS
C62 0.047
+5BB
IC10
TC7S08F
2 INPUT AND GATE
RAS
C26 0.1
IC11
M5M44265CJ6S
4M BIT DYNAMIC RAM
VCC VCC VCC
WR
RAS
LCAS
UCAS
OE
WE
NC
I/O
AD
VSS VSS VSS
IC1
MN1382QTX
RESET IC
VDD OUT
VSS
R4 4.7K
R3 4.7K
C3 0.1
IC2
QVIGPR702AX1
8M BIT PROGRAM ROM(ODD)
VCC
BYTE
RY/BY
RESET
CE
OE
WE
AD
DT
VSS VSS

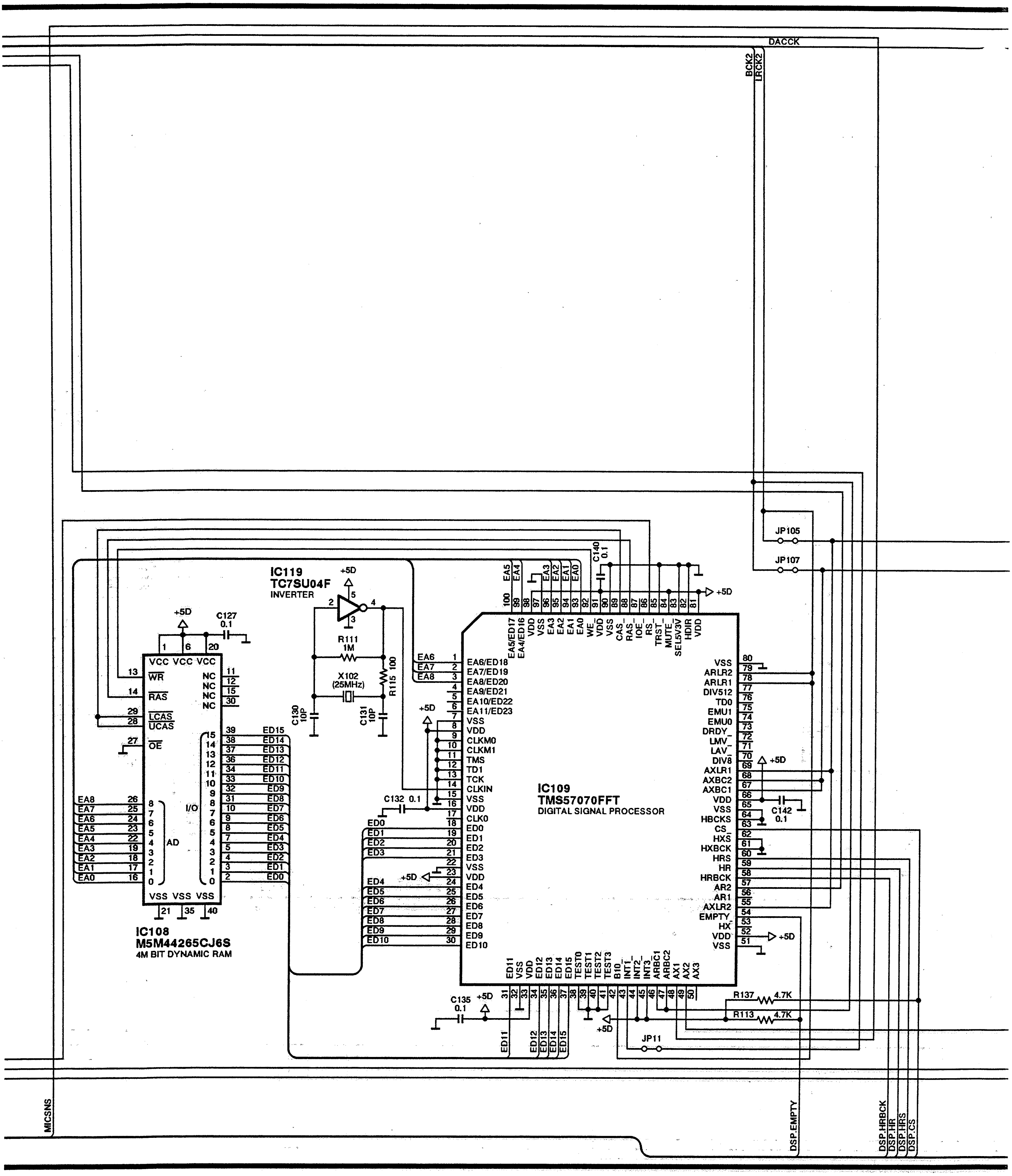

CN5
1 IP
2 E
3 MOT
4 DIR
5 STEP
6 WDT
7 WGA
8 TRK0
9 WPRT
10 RDT
11 SIDE
12 DCH
13 +5D
14 E
15 E
FDD
Z22 47 × 4
Z23 47 × 4
Z24 47 × 4
+5D
CN7
SNS
D0 D1 D2 D3 D4 D5 D6 D7
A1 A2
IORST
LUCAS
LLCAS
IC9D
C27 0.1
+5BB
IC9C
IC9
TC74VHC08F
QUAD 2 INPUT AND GATE
WE
OE
+5BB
C29 0.1
VCC VCC VCC
WR
RAS
LCAS
UCAS
OE
NC
I/O
AD
VSS VSS VSS
IC13
M5M44265CJ6S
4M BIT DYNAMIC RAM
+5D
C30 0.1
JP13
VCC BYTE
WP
CE1
OE
NC
AD
DT
VSS VSS
IC14
QSIGX3C24004
24M BIT
RHYTHM DATA ROM
CN6
1 VLCD
2 VEE
3 D3
4 D2
5 D1
6 D0
7 DOFF
8 VSS
9 VDD
10 CP
11 LOAD
12 FRM
INVL
CN4
Z26 1K × 4
Z25 470 × 4
L8 L7 L6 L5
L5–8
BK2125LM252T
C6 0.1
C10 0.1
C20 0.1
VCC BYTE
RY/BY
RESET
CE
OE
WE
AD
DT
VSS VSS
JP2
JP4
IC4
QVIGPR702AX1
8M BIT PROGRAM ROM(EVEN)
IC5
QSIGX3C08005
8M BIT TABLE DATA ROM(ODD)
IC7
QSIGX3C08004
8M BIT TABLE DATA ROM(EVEN)

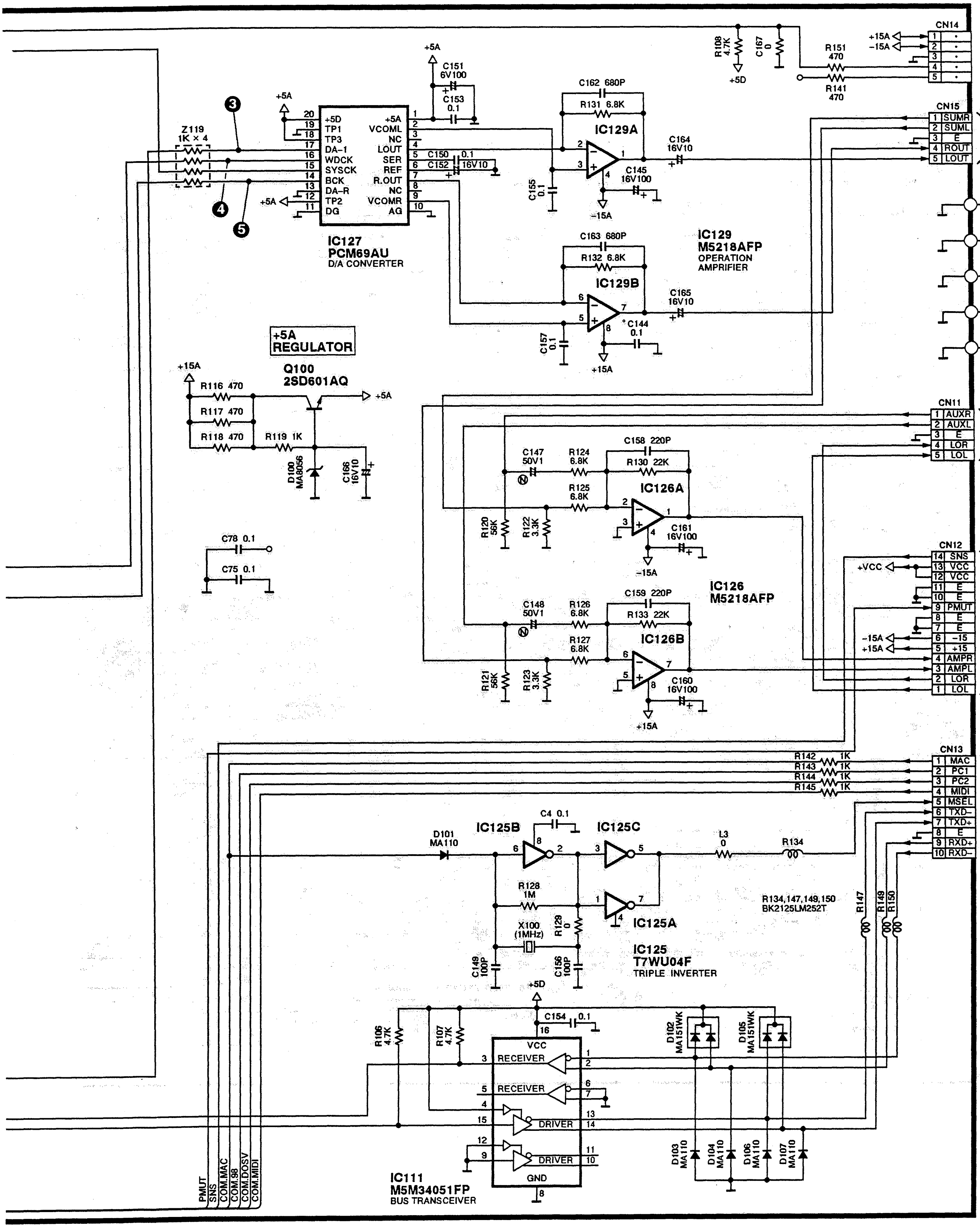


+5D
C122
0.1
23
33
VCC
BYTE
AY20
JP102
44
WP
CE1
12
14
OE
WE
1
AY19 43
AY18 2
AY17 3
AY16 34
AY15 35
AY14 36
AY13 37
AY12 38
AY11 39
AY10 40
AY9 41
AY8 42
AY7 4
AY6 5
AY5 6
AY4 7
AY3 8
AY2 9
AY1 10
AY0 11
AD
DT
31 RD15
29 RD14
27 RD13
25 RD12
22 RD11
20 RD10
18 RD9
16 RD8
30 RD7
28 RD6
26 RD5
24 RD4
21 RD3
19 RD2
17 RD1
15 RD0
VSS
VSS
13
32
IC104
QSIGU3C32342
32M BIT WAVEFORM ROM
Z103
4.7K × 4
Z104
4.7K × 4
CN10
+5D 1
E 2
KF0 3
KS0 4
KF1 5
KS1 6
KF2 7
KS2 8
KF3 9
KS3 10
KDB3 11
KDB2 12
KDB1 13
KDB0 14
KDB4 15
E 16
MKB1
CN2
Z100
470 × 4
KF0
KS0
KF1
KS1
KF2
KS2
KF3
KS3
Z101
470 × 4
Z102
470 × 4
R100
470
100P
C100
C101
C102
C103
C104
C121
0.1
AX20
JP103
AX19 43
AX18 2
AX17 3
AX16 34
AX15 35
AX14 36
AX13 37
AX12 38
AX11 39
AX10 40
AX9 41
AX8 42
AX7 4
AX6 5
AX5 6
AX4 7
AX3 8
AX2 9
AX1 10
AX0 11
IC105
QSIGU3C32541
32M BIT WAVEFORM ROM
IC101
M5223FPE1
OPERATION AMPLIFIER
IC101A
Q101
2SD592ARS
+3.3D
R112 1K
R101 1K
R102 1K
IC101B
C111 0.1
C112 0.1
C113 6V47
+15A
MRXD
MTXD

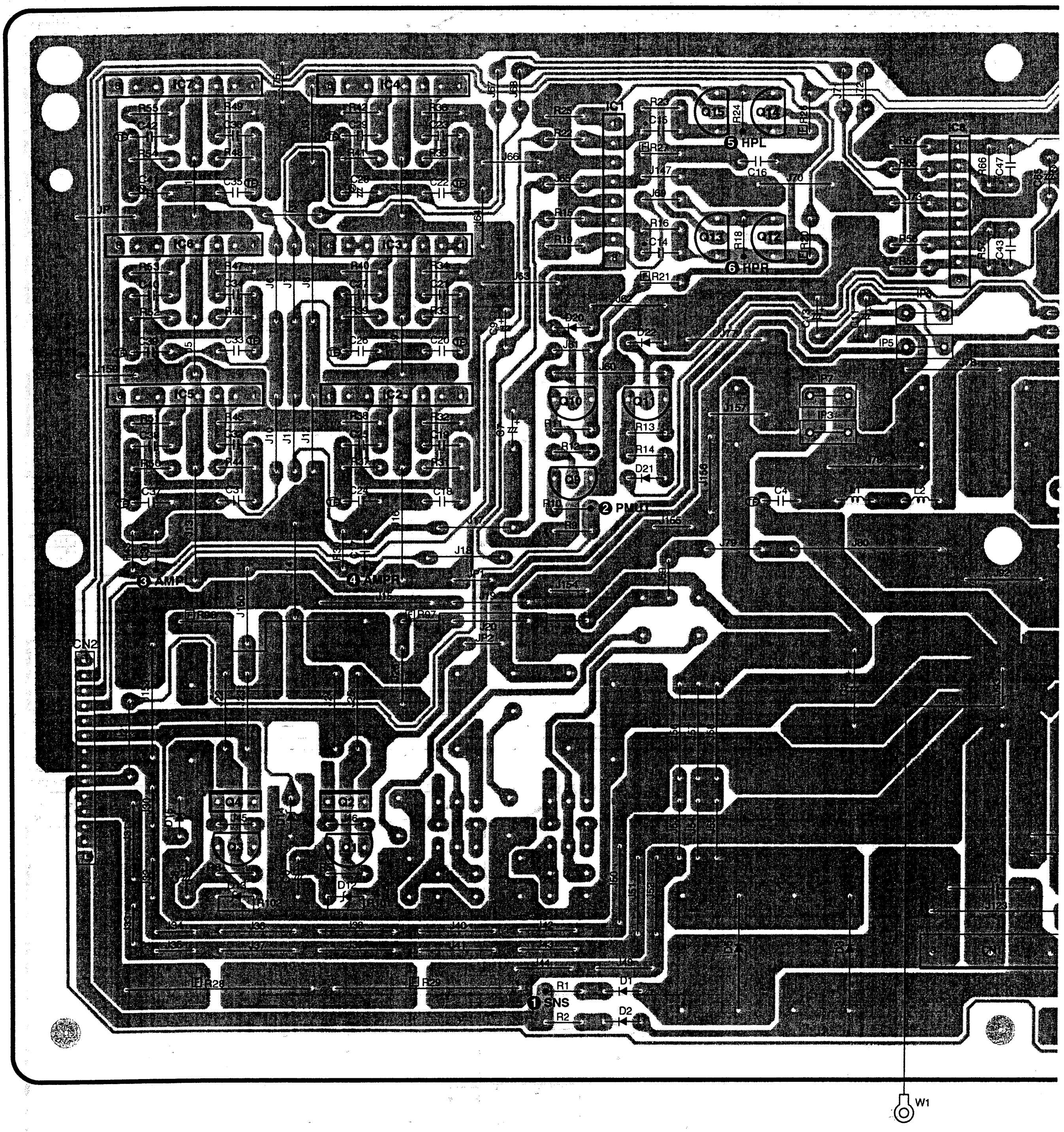


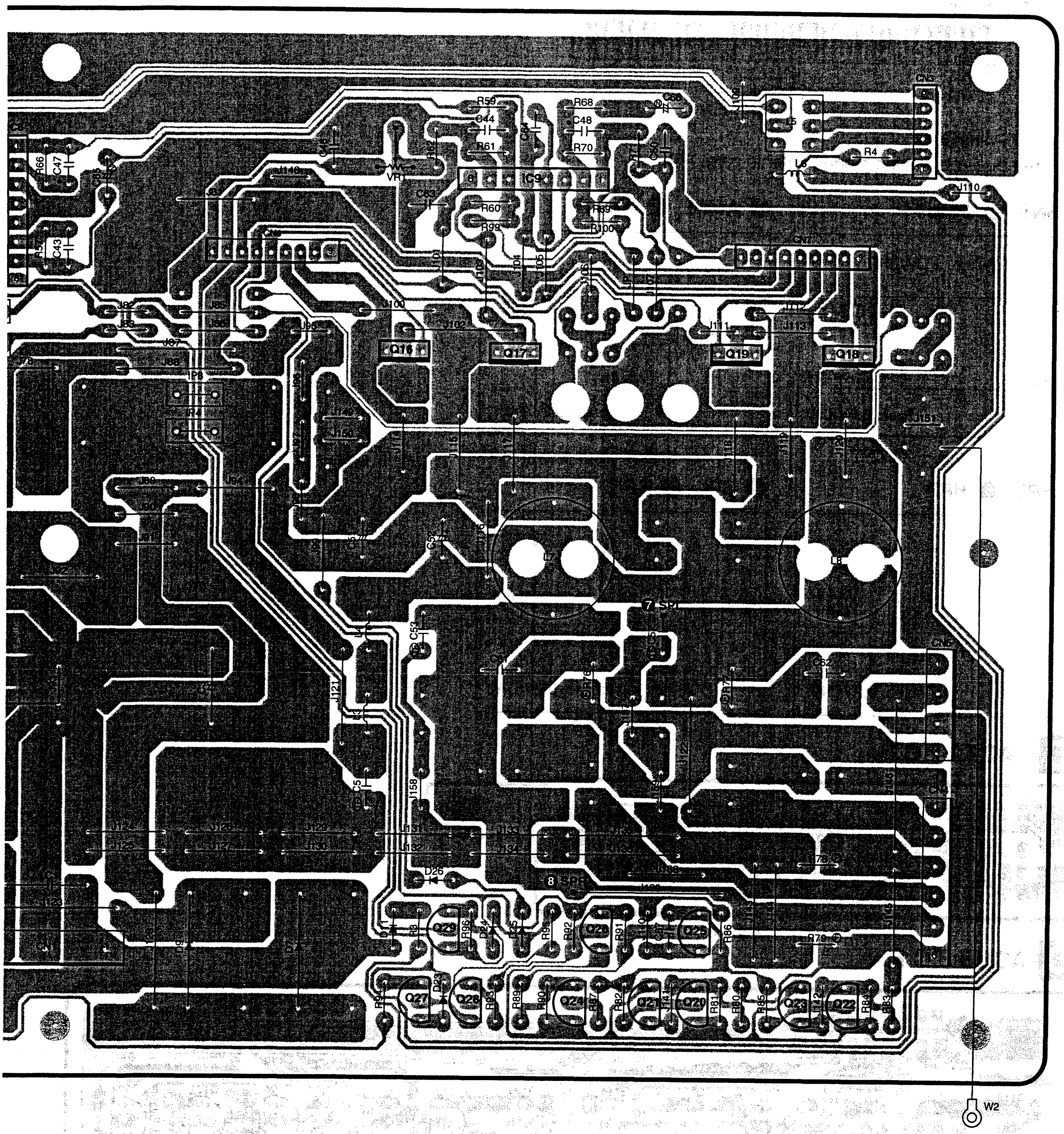
IC102
TC7W74F
INVERTER
IC103
TC203C220004
TONE GENERATOR LSI
❷ TG CLOCK
X101 (33.8688MHz)
C108 0.1
C110 0.1
C109 0.1
C114 0.1
C115 0.1
C116 0.1
C117 0.1
C118 0.1
C119 0.1
C120 0.1
C105 6P
C107 6P
R103 1M
R104 4.7K
R105 4.7K
R135 4.7K
R114 100
R138 220
R139 100
R109 1K
R110 1K
R154 470
R153 470
Z105 220 × 4
Z106 220 × 4
Z107 220 × 4
Z108 220 × 4
Z109 220 × 4
Z110 220 × 4
Z111 220 × 4
Z112 220 × 4
Z113 220 × 4
Z114 220 × 4
Z115 220 × 4
Z116 220 × 4
Z117 220 × 4
Z118 220 × 4
Z120 220 × 4
+5D
+3.3D
DACCK
LRCK
BCK2
LRCK2
MTMG
SDO0
COMTXD
COMRXD
UART.RST
RD
WRLL
UART.CS
SGCS
ORST
UART.INT1
KSCS
UART.C/D
UART.INT0
A1
A2
A3
AY0
AY1
AY15
AY16
AX16
AX20
AY20


DACCK
BCK2
LRCK2
JP105
JP107
IC119
TC7SU04F
INVERTER
+5D
R111
1M
X102
(25MHz)
R115 100
C130
10P
C131
10P
C127
0.1
C140
0.1
C132 0.1
C135
0.1
C142
0.1
R137 4.7K
R113 4.7K
JP11
IC108
M5M44265CJ6S
4M BIT DYNAMIC RAM
VCC VCC VCC
WR
RAS
LCAS
UCAS
OE
NC
I/O
AD
VSS VSS VSS
EA0
EA1
EA2
EA3
EA4
EA5
EA6
EA7
EA8
ED0
ED1
ED2
ED3
ED4
ED5
ED6
ED7
ED8
ED9
ED10
ED11
ED12
ED13
ED14
ED15
IC109
TMS57070FFT
DIGITAL SIGNAL PROCESSOR
EA6/ED18
EA7/ED19
EA8/ED20
EA9/ED21
EA10/ED22
EA11/ED23
VSS
VDD
CLKM0
CLKM1
TMS
TD1
TCK
CLKIN
CLKO
EA5/ED17
EA4/ED16
WE
CAS
RAS
IOE
RS
TRST
MUTE
SEL5V3V
HDIR
ARLR2
ARLR1
DIV512
TD0
EMU1
EMU0
DRDY
LMV
LAV
DIV8
AXLR1
AXBC2
AXBC1
HBCKS
CS
HXS
HXBCK
HRS
HR
HRBCK
AR2
AR1
AXLR2
EMPTY
HX
TEST0
TEST1
TEST2
TEST3
B10
INT1
INT2
INT3
ARBC1
ARBC2
AX1
AX2
AX3
MICSNS
DSP.EMPTY
DSP.HRBCK
DSP.HR
DSP.HRS
DSP.CS


IC127
PCM69AU
D/A CONVERTER
+5D
TP1
TP3
DA-1
WDCK
SYSCK
BCK
DA-R
TP2
DG
+5A
VCOML
NC
LOUT
SER
REF
R.OUT
NC
VCOMR
AG
Z119
1K × 4
❸
❹
❺
C151
6V100
C153
0.1
C150 0.1
C152 16V10
C162 680P
R131 6.8K
IC129A
C164
16V10
C145
16V100
C155
0.1
-15A
C163 680P
R132 6.8K
IC129B
C165
16V10
C144
0.1
C157
0.1
+15A
IC129
M5218AFP
OPERATION
AMPRIFIER
R108
4.7K
C167
0
+5D
R151
470
R141
470
CN14
+15A
-15A
CN15
SUMR
SUML
E
ROUT
LOUT
CPL
CN2
W1
W2
W3
W4
W5
+5A
REGULATOR
Q100
2SD601AQ
+15A
R116 470
R117 470
R118 470
R119 1K
D100
MA8056
C166
16V10
C78 0.1
C75 0.1
CN11
AUXR
AUXL
E
LOR
LOL
JACK
CN1
C158 220P
C147
50V1
R124
6.8K
R130 22K
R125
6.8K
IC126A
R120
56K
R122
3.3K
C161
16V100
-15A
IC126
M5218AFP
C159 220P
C148
50V1
R126
6.8K
R133 22K
R127
6.8K
IC126B
R121
56K
R123
3.3K
C160
16V100
+15A
CN12
SNS
VCC
VCC
E
E
PMUT
E
E
-15
+15
AMPR
AMPL
LOR
LOL
+VCC
-15A
+15A
AS
CN2
CN13
MAC
PC1
PC2
MIDI
MSEL
TXD-
TXD+
E
RXD+
RXD-
JACK
CN3
R142 1K
R143 1K
R144 1K
R145 1K
D101
MA110
IC125B
C4 0.1
IC125C
L3
0
R134
R128
1M
X100
(1MHz)
R129
0
IC125A
C149
100P
C156
100P
IC125
T7WU04F
TRIPLE INVERTER
R134,147,149,150
BK2125LM252T
R147
R149
R150
+5D
C154 0.1
R106
4.7K
R107
4.7K
VCC
RECEIVER
RECEIVER
DRIVER
DRIVER
GND
D102
MA151WK
D105
MA151WK
D103
MA110
D104
MA110
D106
MA110
D107
MA110
IC111
M5M34051FP
BUS TRANSCEIVER
PMUT
SNS
COM.MAC
COM.98
COM.DOSV
COM.MIDI

B AS P.C.B.


IC7
IC4
IC1
IC6
IC3
IC5
IC2
Q15
Q14
Q13
Q12
Q10
Q11
Q9
Q4
Q2
5 HPL
6 HPR
2 PMU
3 AMPL
4 AMPR
1 SNS
CN2
R1
R2
D1
D2
D20
D21
D22
IP3
IP5
L1
L2
C16
C14
R21
R27
R28
R29
J147
J66
J70
J80
J155
J156
J157
W1

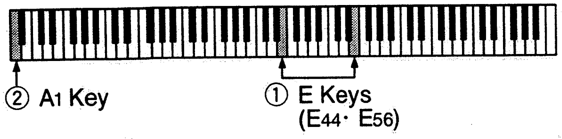

R59
R68
C68
C44
C48
C42
VR1
R82
C64
R61
R70
C50
IC9
J148
C63
R60
R69
R99
R100
R66
C47
C43
CN7
J110
R4
L6
J100
J102
J111
J112
J113
Q16
Q17
Q19
Q18
J151
J89
L7
L8
7 SP
C53
C62
C55
J121
J158
J124
J125
J126
J127
J128
J129
J130
J131
J132
J133
J134
J138
D26
8 SP
R3
Q29
R96
D24
R95
R92
Q21
R91
Q25
R86
R79
Q27
D23
Q28
R89
R90
Q24
R87
R82
Q21
Q20
R81
R80
R85
Q23
Q22
R84
R83
W2

■ Measuring Condition of AS P.C.B.

Check Point ❸~❽

Set to the self-diagnostic mode followings.

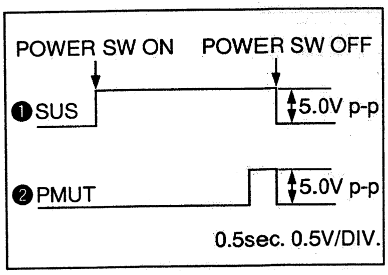
- While pressing two E keys (①) simultaneously, turn on the power switch.
- SOUND .... SYNTH
- Main Volume .... MAX
- Keyboard .... A1 (②)


② A1 Key
① E Keys
(E44· E56)

Check Point ❶, ❷

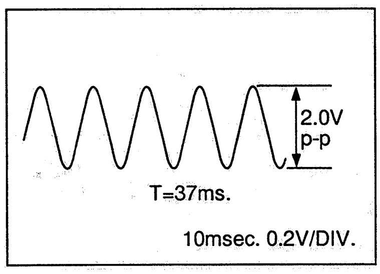
Set the initial setting mode (Refer to page I-5)

❶ SNS, ❷ PMUT

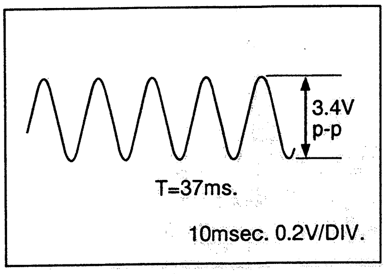


- Power SW .... ON → OFF

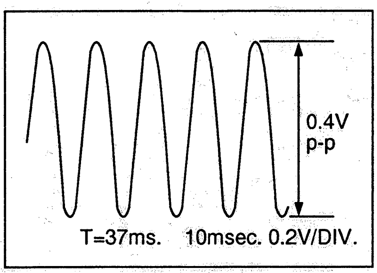
❸ AMPL, ❹ AMPR



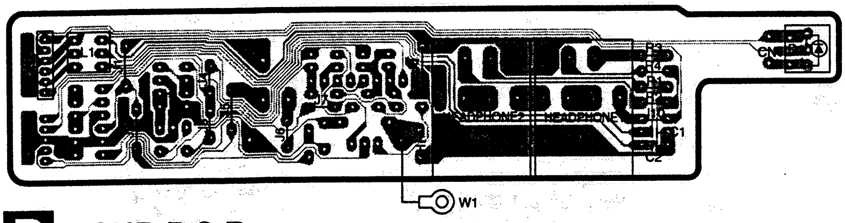
❺ HPL, ❻ HPR



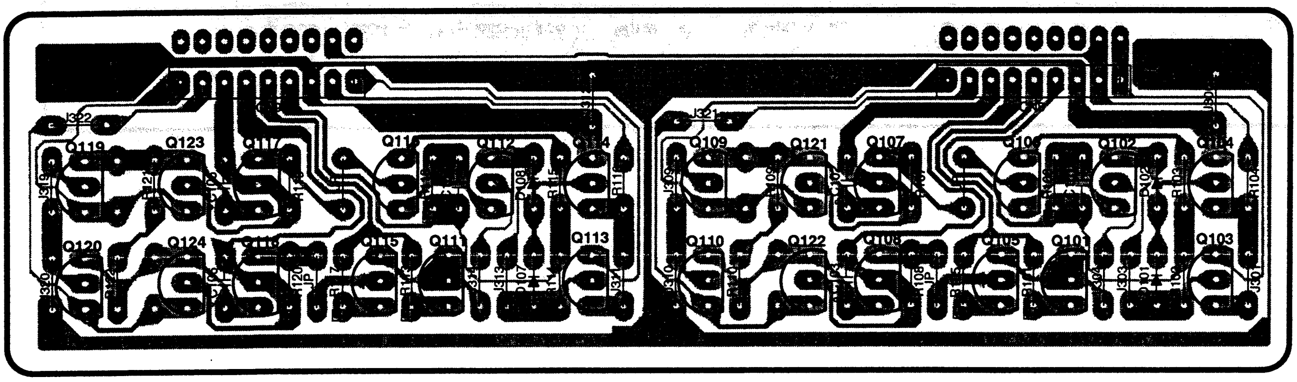
❼ SPL, ❽ SPR



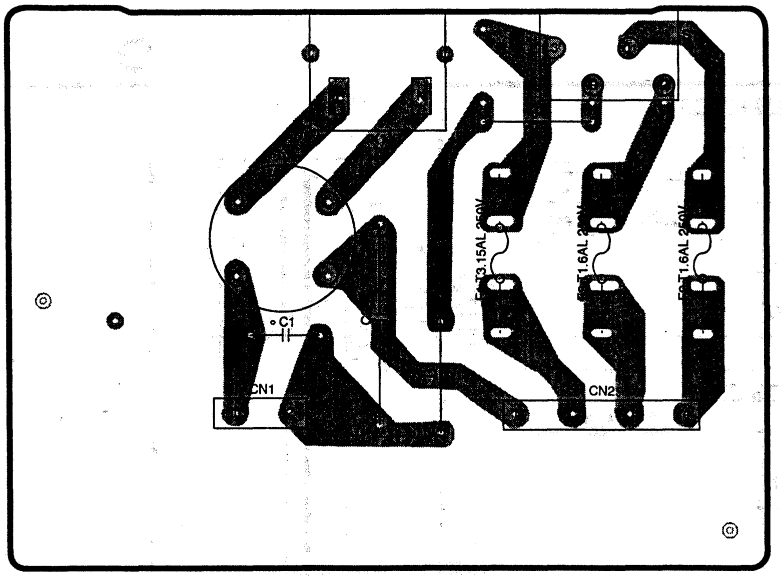
C JACK2 P.C.B.


HEADPHONE2
HEADPHONE
W1

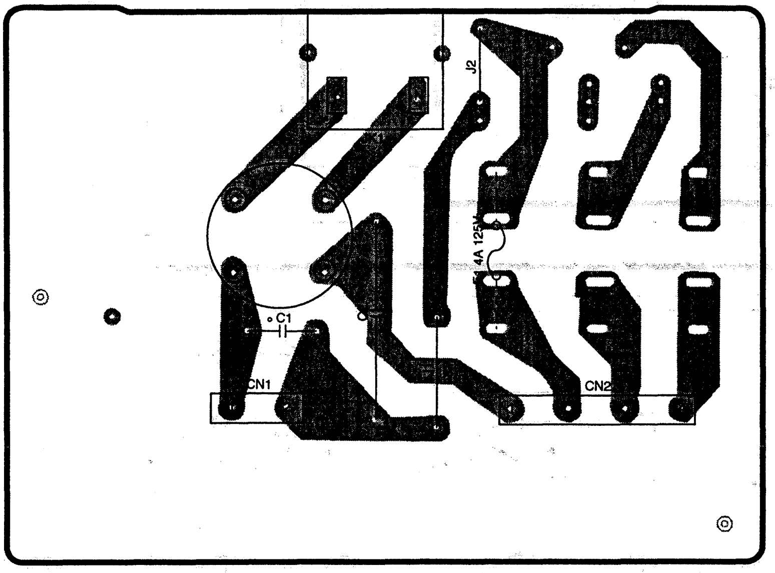
D ASUB P.C.B.


J322
Q119
Q123
Q117
Q115
Q112
Q114
Q120
Q124
Q116
Q115
Q111
Q113
J321
Q109
Q121
Q107
Q106
Q102
Q104
Q110
Q122
Q108
Q105
Q101
Q103

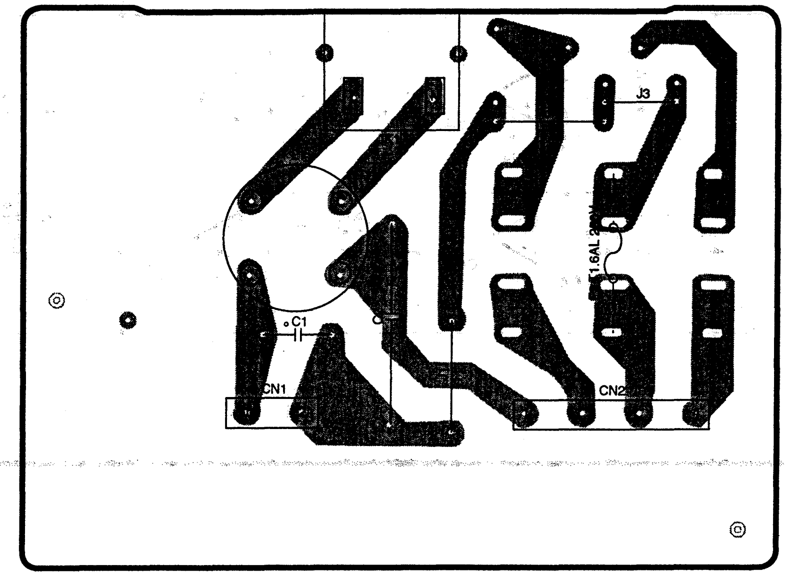
E ACP P.C.B. (**X** **XS** **XD** **XT**)


C1
CN1
CN2
T3.15AL 250V
T1.6AL 250V
T1.6AL 250V

E ACP P.C.B. (**M** **MC** **XM**)

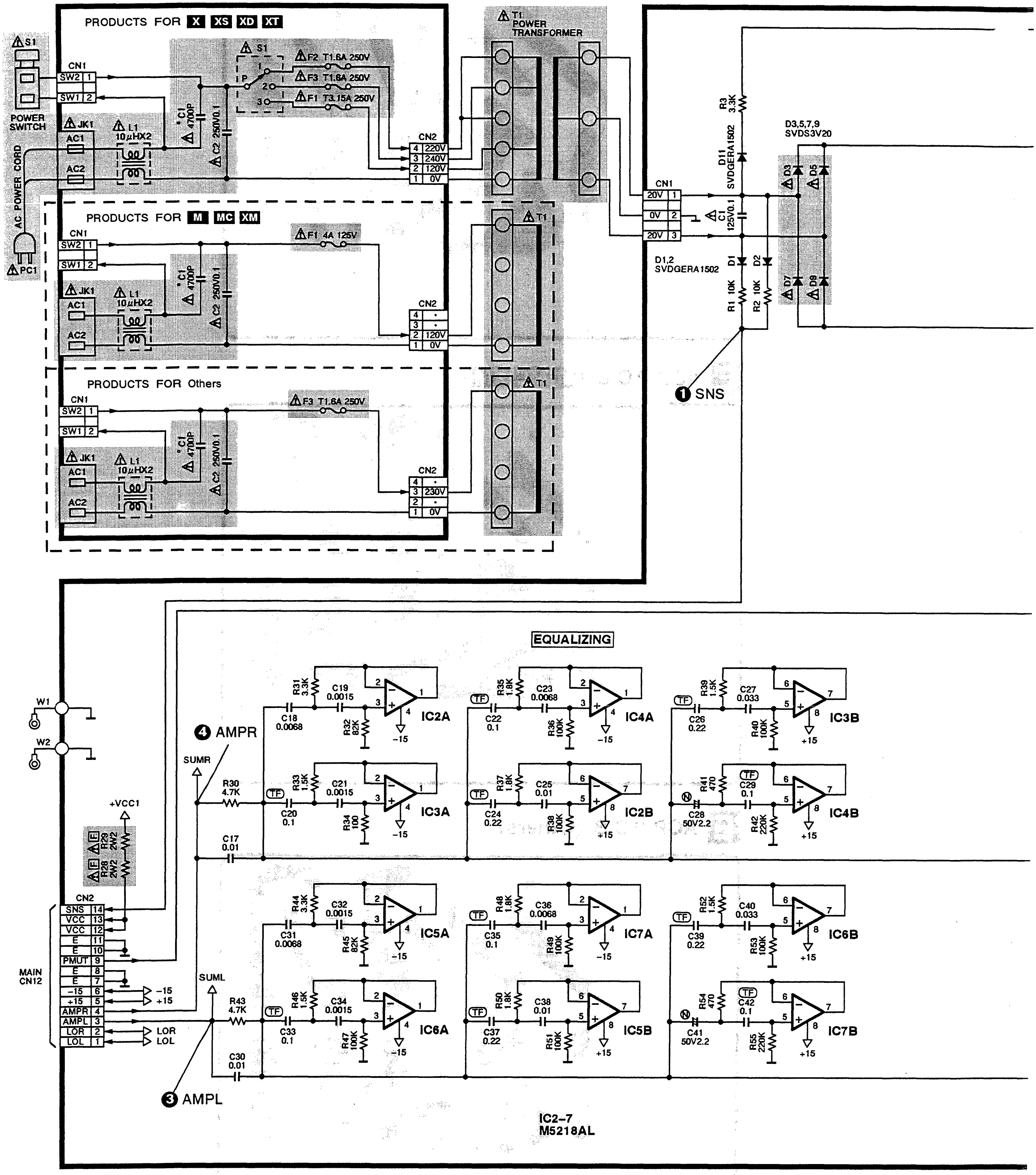

J2
4A 125V
C1
CN1
CN2

E ACP P.C.B. (Others)

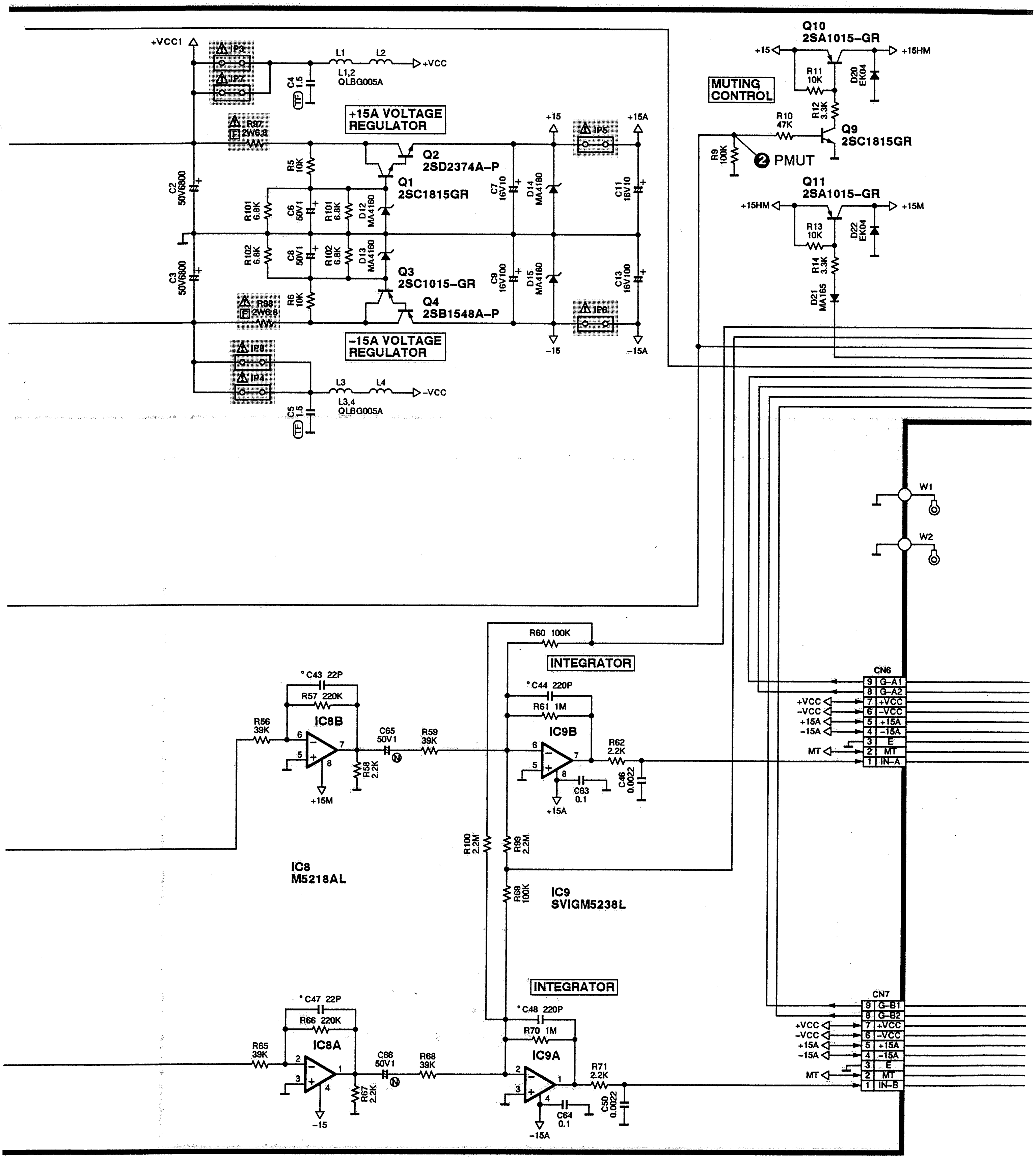

J3
T1.6AL 250V
C1
CN1
CN2

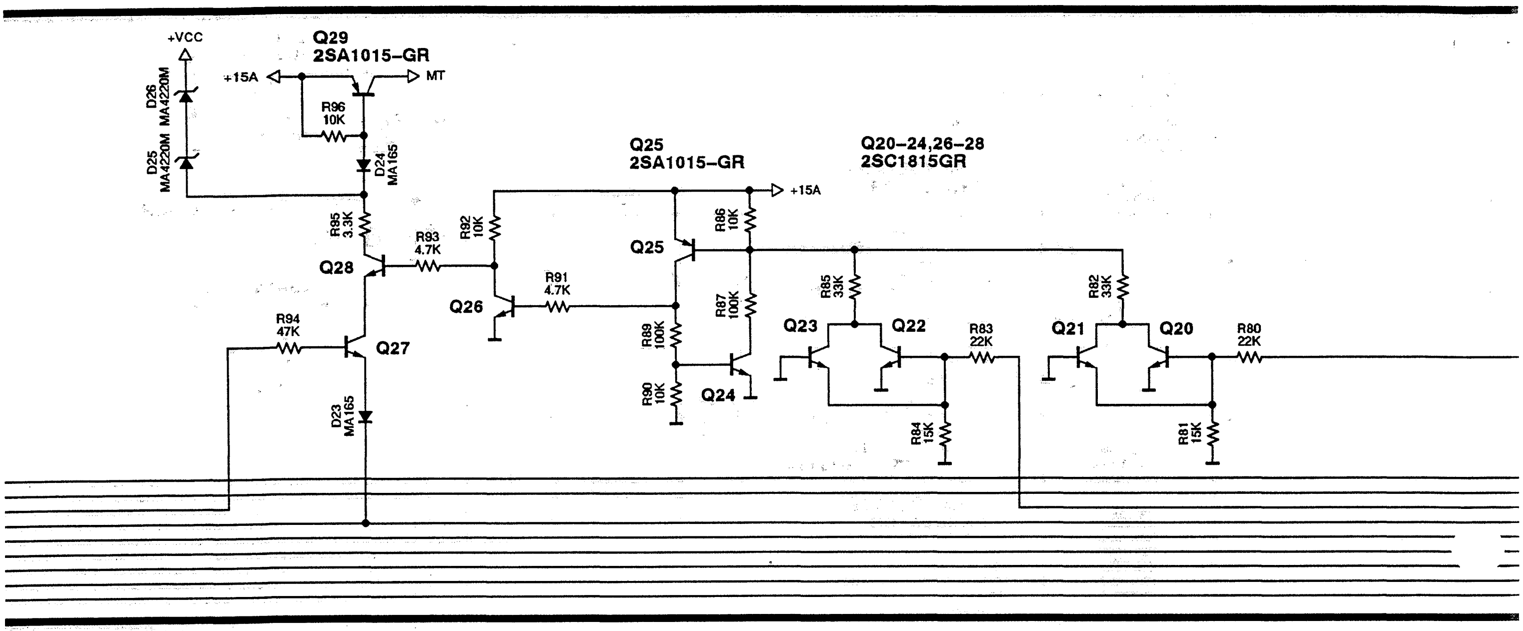
E ACP CIRCUIT

B AS CIRCUIT

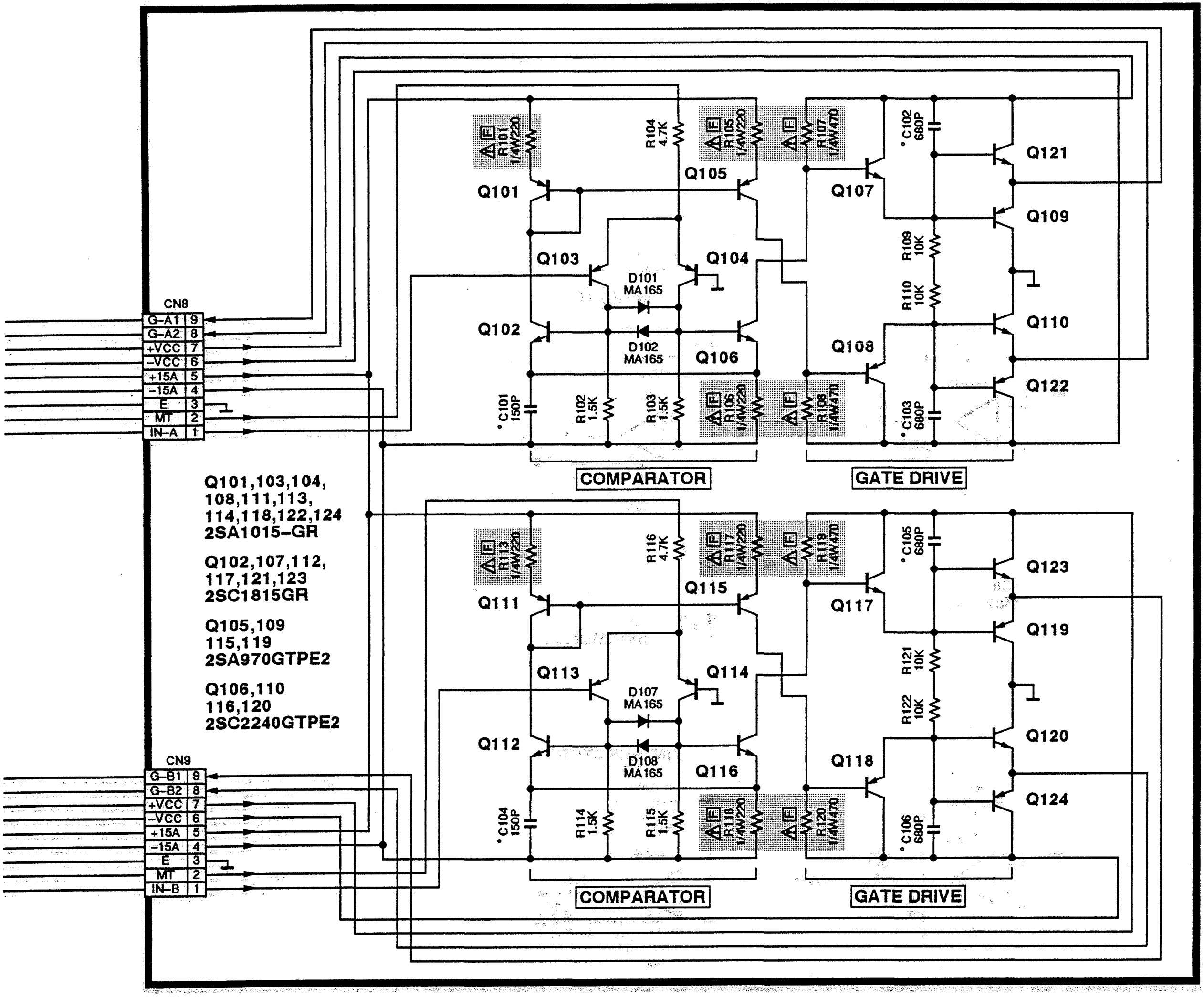


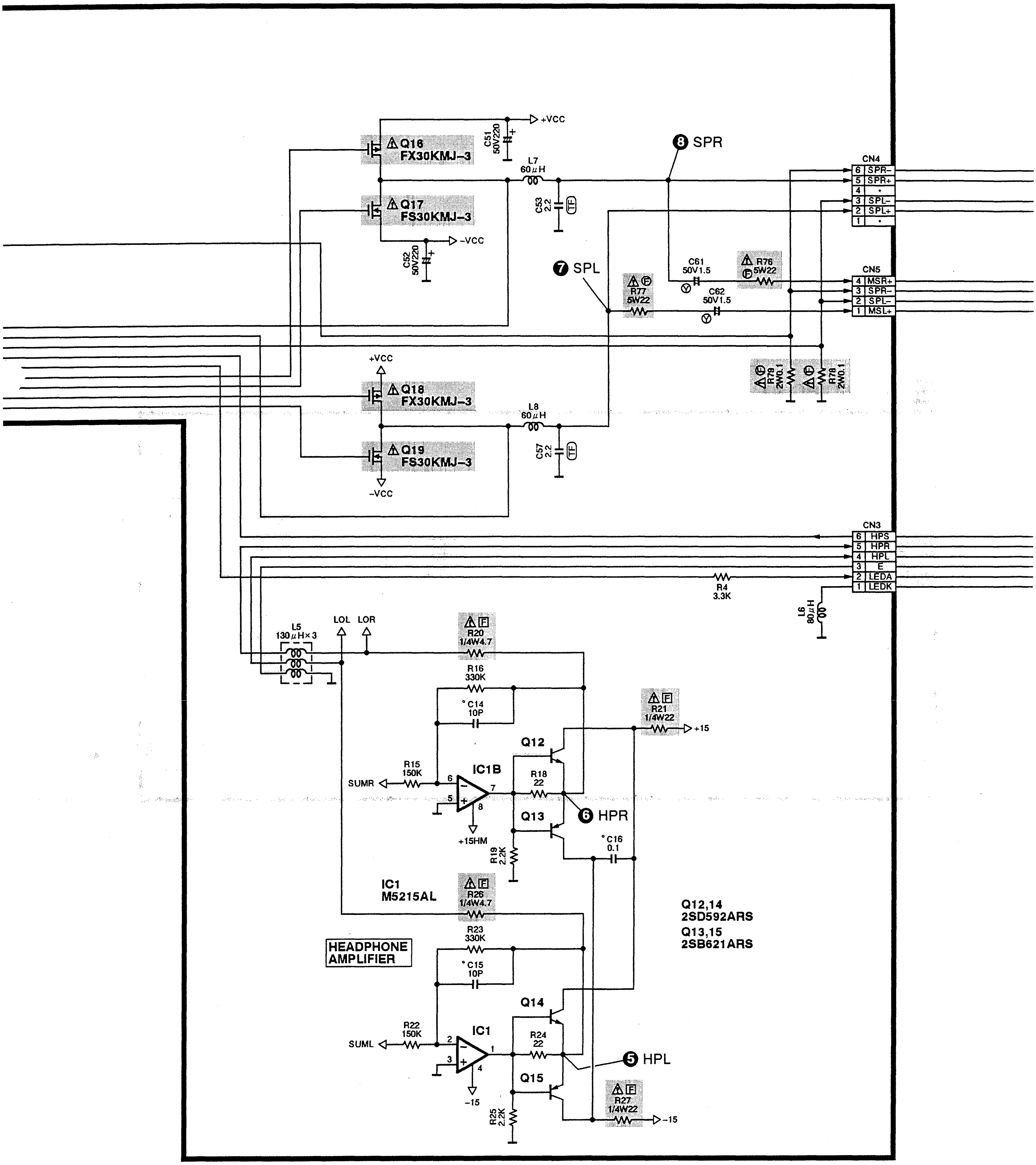
PRODUCTS FOR X XS XD XT
S1
CN1
SW2 1
SW1 2
POWER SWITCH
AC POWER CORD
PC1
JK1
AC1
AC2
L1 10µHX2
C1 4700P
C2 250V0.1
S1
P
1
2
3
F2 T1.6A 250V
F3 T1.6A 250V
F1 T3.15A 250V
CN2
4 220V
3 240V
2 120V
1 0V
T1 POWER TRANSFORMER
PRODUCTS FOR M MC XM
F1 4A 125V
2 120V
1 0V
PRODUCTS FOR Others
F3 T1.6A 250V
3 230V
R3 3.3K
D11 SVDGERA1502
D3,5,7,9 SVDS3V20
D3
D5
D7
D9
CN1
20V 1
0V 2
20V 3
C1 125V0.1
D1,2 SVDGERA1502
D1
D2
R1 10K
R2 10K
1 SNS
EQUALIZING
W1
W2
+VCC1
R29 2W2
R28 2W2
CN2
SNS 14
VCC 13
VCC 12
E 11
E 10
PMUT 9
E 8
E 7
-15 6
+15 5
AMPR 4
AMPL 3
LOR 2
LOL 1
MAIN CN12
-15
+15
LOR
LOL
4 AMPR
SUMR
R30 4.7K
C17 0.01
SUML
R43 4.7K
C30 0.01
3 AMPL
TF
R31 3.3K
C19 0.0015
C18 0.0068
R32 82K
IC2A
R33 1.5K
C21 0.0015
C20 0.1
R34 100
IC3A
R35 1.8K
C23 0.0068
C22 0.1
R36 100K
IC4A
R37 1.8K
C25 0.01
C24 0.22
R38 100K
IC2B
R39 1.5K
C27 0.033
C26 0.22
R40 100K
IC3B
R41 470
C29 0.1
C28 50V2.2
R42 220K
IC4B
R44 3.3K
C32 0.0015
C31 0.0068
R45 82K
IC5A
R46 1.5K
C34 0.0015
C33 0.1
R47 100K
IC6A
R48 1.8K
C36 0.0068
C35 0.1
R49 100K
IC7A
R50 1.8K
C38 0.01
C37 0.22
R51 100K
IC5B
R52 1.5K
C40 0.033
C39 0.22
R53 100K
IC6B
R54 470
C42 0.1
C41 50V2.2
R55 220K
IC7B
IC2-7 M5218AL

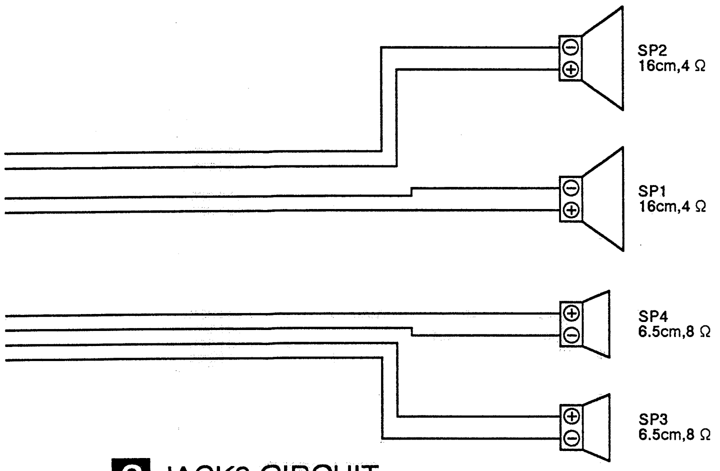

+VCC1
IP3
IP7
L1
L2
+VCC
L1,2
QLBG005A
C4 1.5
TF
+15A VOLTAGE REGULATOR
R97 2W6.8
F
+15
+15A
IP5
Q2 2SD2374A–P
Q1 2SC1815GR
R5 10K
C2 50V6800
R101 6.8K
C6 50V1
R101 6.8K
D12 MA4160
C7 16V10
D14 MA4180
C11 16V10
R102 6.8K
C8 50V1
R102 6.8K
D13 MA4160
C3 50V6800
Q3 2SC1015–GR
C9 16V100
D15 MA4180
C13 16V100
R98 2W6.8
R6 10K
Q4 2SB1548A–P
IP6
–15
–15A
–15A VOLTAGE REGULATOR
IP8
IP4
L3
L4
–VCC
L3,4
QLBG005A
C5 1.5
Q10 2SA1015–GR
+15
+15HM
MUTING CONTROL
R11 10K
D20 EK04
R12 3.3K
R10 47K
Q9 2SC1815GR
R9 100K
❷ PMUT
Q11 2SA1015–GR
+15HM
+15M
R13 10K
D22 EK04
R14 3.3K
D21 MA165
W1
W2
R60 100K
INTEGRATOR
°C43 22P
R57 220K
°C44 220P
R61 1M
R56 39K
IC8B
C65 50V1
R59 39K
IC9B
R62 2.2K
R58 2.2K
+15M
C46 0.0022
C63 0.1
+15A
CN6
9 G–A1
8 G–A2
7 +VCC
6 –VCC
5 +15A
4 –15A
3 E
2 MT
1 IN–A
+VCC
–VCC
+15A
–15A
MT
R100 2.2M
R99 2.2M
IC8 M5218AL
R69 100K
IC9 SVIGM5238L
INTEGRATOR
°C47 22P
R66 220K
°C48 220P
R70 1M
R65 39K
IC8A
C66 50V1
R68 39K
IC9A
R71 2.2K
R67 2.2K
C50 0.0022
–15
C64 0.1
–15A
CN7
9 G–B1
8 G–B2
7 +VCC
6 –VCC
5 +15A
4 –15A
3 E
2 MT
1 IN–B
+VCC
–VCC
+15A
–15A
MT


+VCC
Q29
2SA1015-GR
+15A
MT
D26
MA4220M
D25
MA4220M
R96
10K
D24
MA165
Q25
2SA1015-GR
Q20-24,26-28
2SC1815GR
+15A
R95
3.3K
R93
4.7K
R92
10K
R86
10K
Q25
Q28
R91
4.7K
Q26
R85
33K
R82
33K
R94
47K
Q27
R89
100K
R87
100K
Q23
Q22
R83
22K
Q21
Q20
R80
22K
R90
10K
Q24
D23
MA165
R84
15K
R81
15K

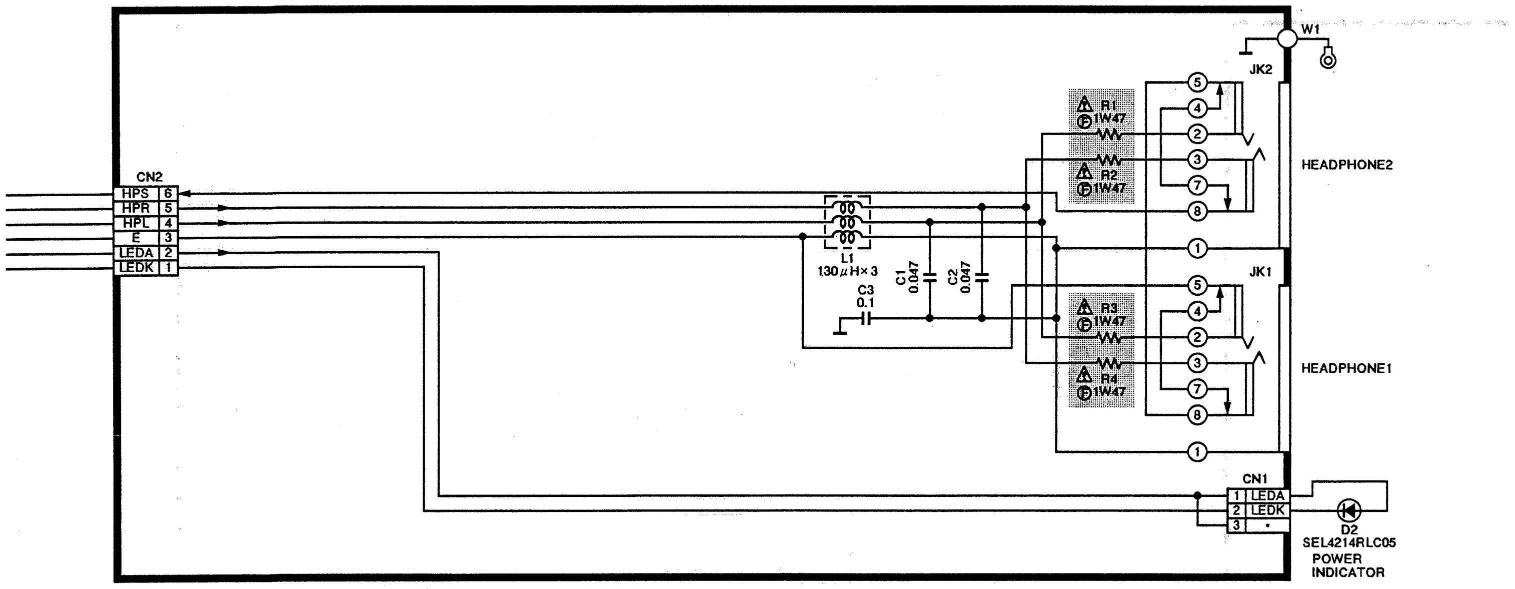
D ASUB CIRCUIT


CN8
G-A1 9
G-A2 8
+VCC 7
-VCC 6
+15A 5
-15A 4
E 3
MT 2
IN-A 1
⚠F R101 1/4W220
R104 4.7K
⚠F R105 1/4W220
⚠F R107 1/4W470
C102 680P
Q121
Q101
Q105
Q107
Q109
Q103
D101 MA165
Q104
R109 10K
R110 10K
Q102
D102 MA165
Q106
Q108
Q110
Q122
C101 150P
R102 1.5K
R103 1.5K
⚠F R106 1/4W220
⚠F R108 1/4W470
C103 680P
COMPARATOR
GATE DRIVE
Q101,103,104, 108,111,113, 114,118,122,124 2SA1015-GR
Q102,107,112, 117,121,123 2SC1815GR
Q105,109 115,119 2SA970GTPE2
Q106,110 116,120 2SC2240GTPE2
⚠F R113 1/4W220
R116 4.7K
⚠F R117 1/4W220
⚠F R119 1/4W470
C105 680P
Q123
Q111
Q115
Q117
Q119
Q113
D107 MA165
Q114
R121 10K
R122 10K
Q112
D108 MA165
Q116
Q118
Q120
Q124
CN9
G-B1 9
G-B2 8
+VCC 7
-VCC 6
+15A 5
-15A 4
E 3
MT 2
IN-B 1
C104 150P
R114 1.5K
R115 1.5K
⚠F R118 1/4W220
⚠F R120 1/4W470
C106 680P
COMPARATOR
GATE DRIVE

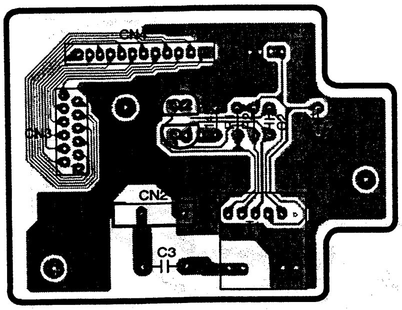

Q16 FX30KMJ-3
Q17 FS30KMJ-3
Q18 FX30KMJ-3
Q19 FS30KMJ-3
C51 50V220
C52 50V220
+VCC
-VCC
L7 60μH
L8 60μH
C53 2.2
C57 2.2
TF
8 SPR
7 SPL
C61 50V1.5
C62 50V1.5
R76 5W22
R77 5W22
R78 2W0.1
R79 2W0.1
F
CN4
6 SPR-
5 SPR+
4 •
3 SPL-
2 SPL+
1 •
CN5
4 MSR+
3 SPR-
2 SPL-
1 MSL+
CN3
6 HPS
5 HPR
4 HPL
3 E
2 LEDA
1 LEDK
R4 3.3K
L6 80μH
L5 130μH×3
LOL
LOR
R20 1/4W4.7
R16 330K
C14 10P
R15 150K
SUMR
IC1B
R18 22
Q12
Q13
6 HPR
R19 2.2K
+15HM
R21 1/4W22
+15
C16 0.1
IC1 M5215AL
R26 1/4W4.7
R23 330K
C15 10P
HEADPHONE AMPLIFIER
R22 150K
SUML
IC1
R24 22
Q14
Q15
5 HPL
R25 2.2K
-15
R27 1/4W22
Q12,14 2SD592ARS
Q13,15 2SB621ARS


SP2
16cm,4 Ω
SP1
16cm,4 Ω
SP4
6.5cm,8 Ω
SP3
6.5cm,8 Ω

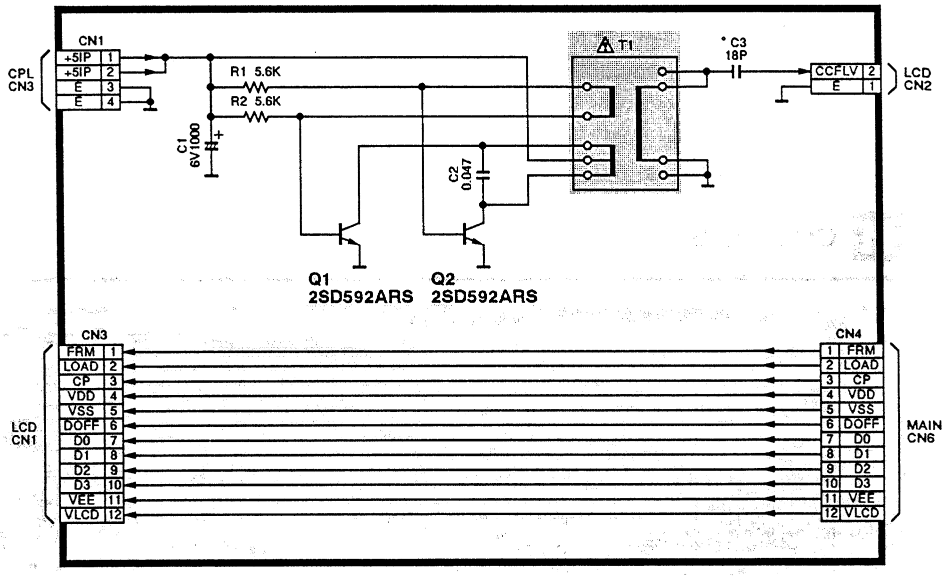
C JACK2 CIRCUIT


CN2
HPS 6
HPR 5
HPL 4
E 3
LEDA 2
LEDK 1
L1
130μH×3
C1
0.047
C2
0.047
C3
0.1
R1
1W47
R2
1W47
R3
1W47
R4
1W47
W1
JK2
HEADPHONE2
JK1
HEADPHONE1
CN1
1 LEDA
2 LEDK
3 •
D2
SEL4214RLC05
POWER
INDICATOR

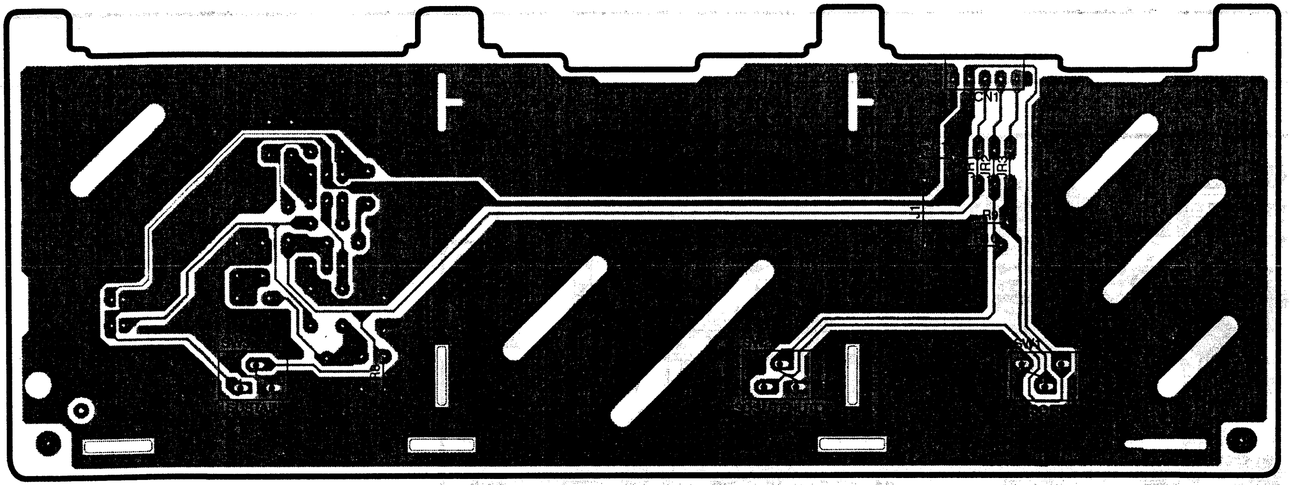
F INVL P.C.B.


CN4
CN3
CN2
C3

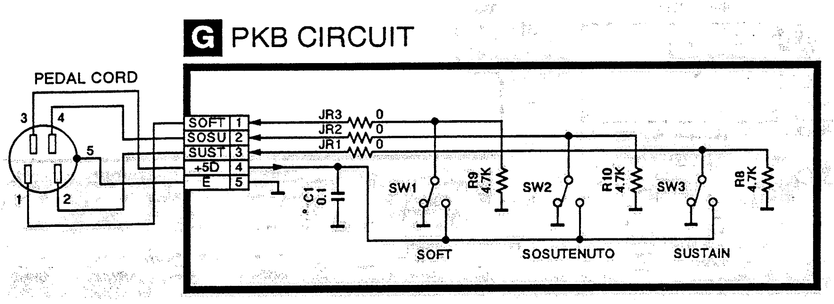
F INVL CIRCUIT


CN1
+5IP 1
+5IP 2
E 3
E 4
CPL
CN3
R1 5.6K
R2 5.6K
C1
6V1000
C2
0.047
T1
* C3
18P
CCFLV 2
E 1
LCD
CN2
Q1
2SD592ARS
Q2
2SD592ARS
CN3
FRM 1
LOAD 2
CP 3
VDD 4
VSS 5
DOFF 6
D0 7
D1 8
D2 9
D3 10
VEE 11
VLCD 12
LCD
CN1
CN4
1 FRM
2 LOAD
3 CP
4 VDD
5 VSS
6 DOFF
7 D0
8 D1
9 D2
10 D3
11 VEE
12 VLCD
MAIN
CN6

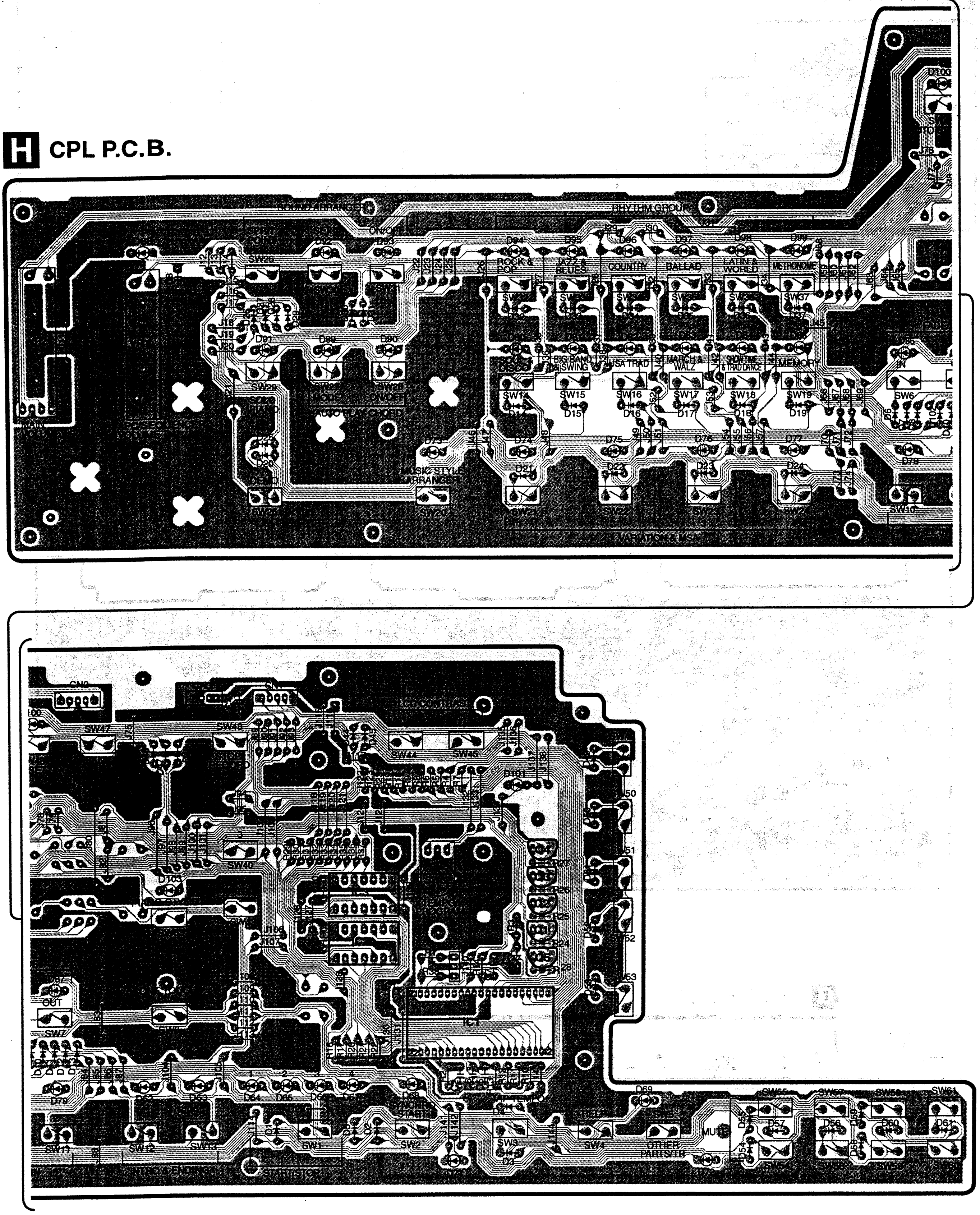
G PKB P.C.B.


CN1
JR1
JR2
JR3
R9
SW1

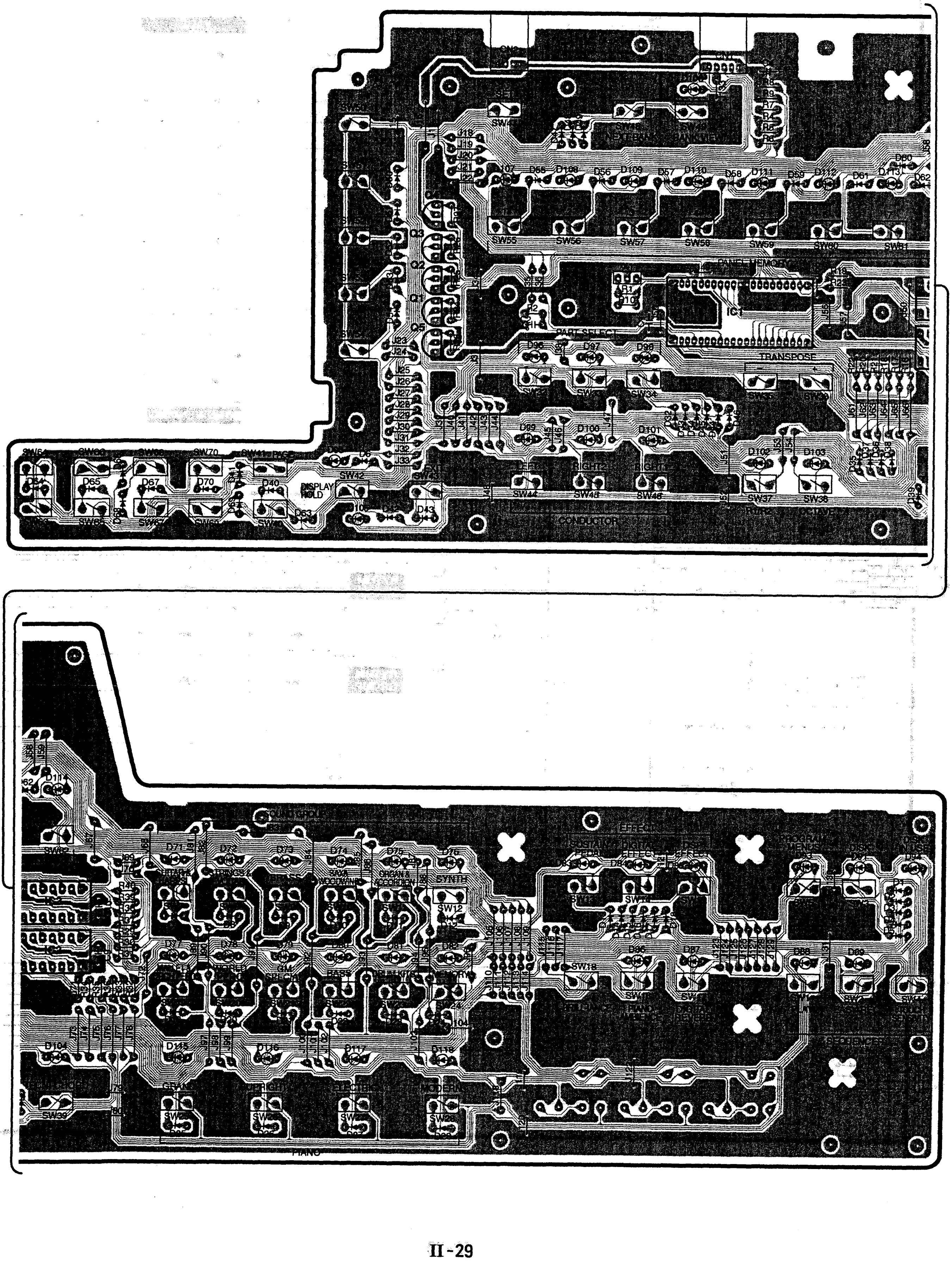
G PKB CIRCUIT


PEDAL CORD
3
4
5
1
2
SOFT 1
SOSU 2
SUST 3
+5D 4
E 5
JR3 0
JR2 0
JR1 0
* C1
0.1
SW1
R9
4.7K
SW2
R10
4.7K
SW3
R8
4.7K
SOFT
SOSUTENUTO
SUSTAIN

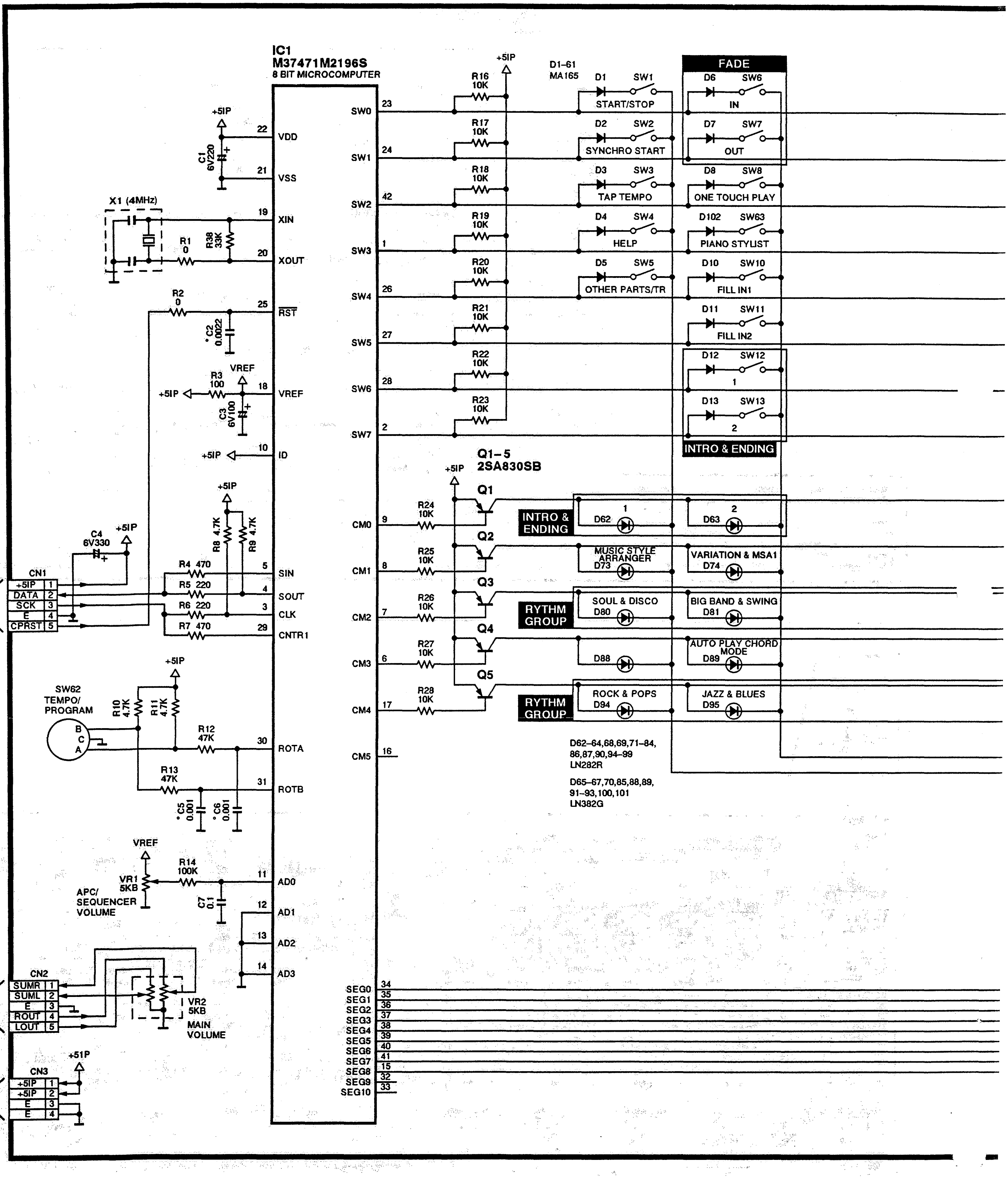
H CPL P.C.B.

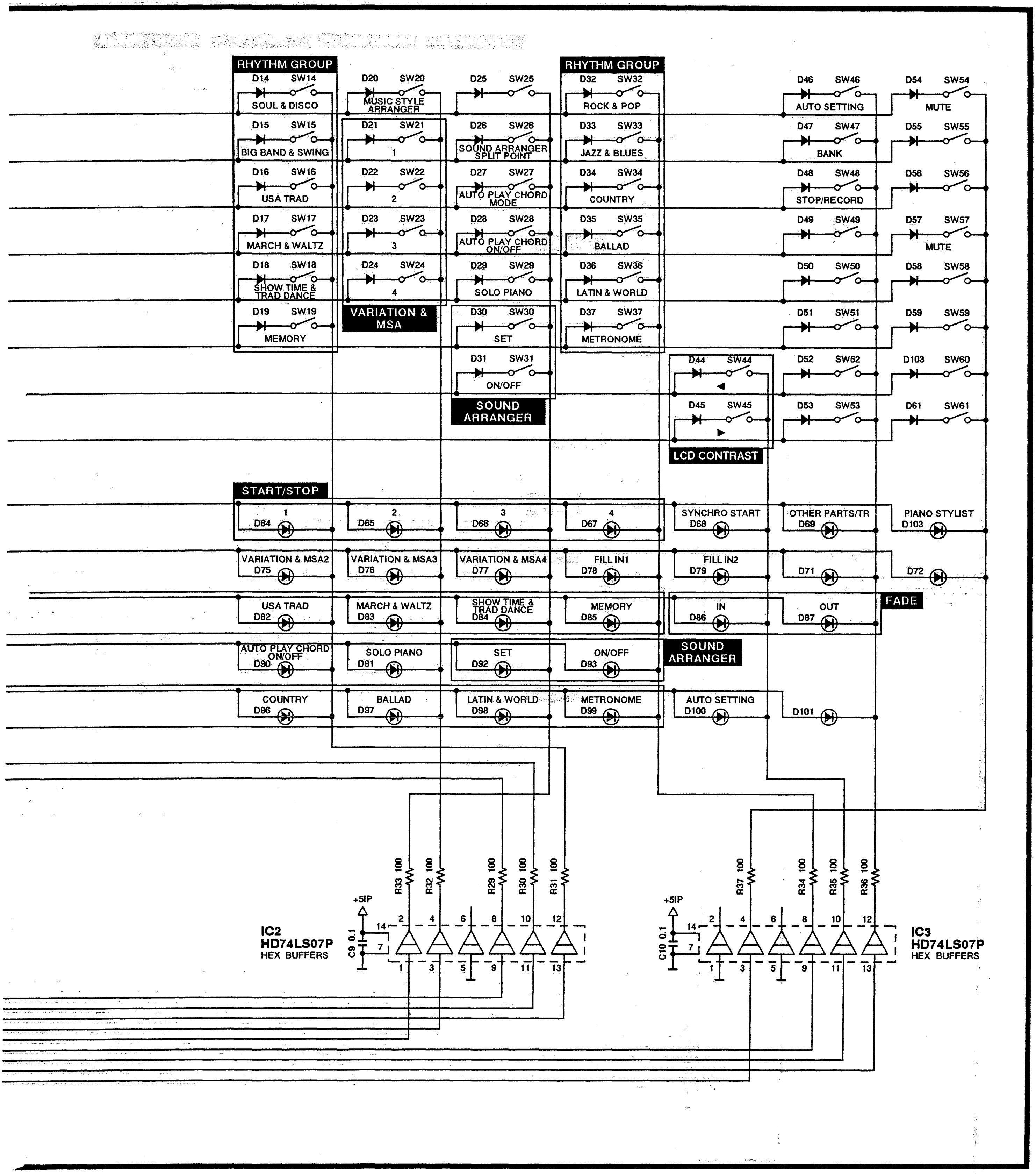

SOUND ARRANGER
RHYTHM GROUP
ON/OFF
ROCK & POP
JAZZ & BLUES
COUNTRY
BALLAD
LATIN & WORLD
METRONOME
SOUL & DISCO
BIG BAND & SWING
USA TRAD
MARCH & WALZ
SHOWTIME & TRAD DANCE
MEMORY
MUSIC STYLE ARRANGER
AUTO PLAY CHORD
MODE
VARIATION & MSA
SW14
SW15
SW16
SW17
SW18
SW19
SW20
SW21
SW22
SW23
SW26
SW29
SW6
SW10
SW37
D15
D16
D17
D18
D19
D74
D75
D76
D77
D78
D89
D90
D91
D92
D93
D94
D95
D96
D97
D98
D99
D100
CN9
SW1
SW2
SW3
SW4
SW7
SW11
SW12
SW13
SW40
SW44
SW45
SW47
SW48
SW50
SW51
SW52
SW53
SW55
SW57
SW59
SW61
IC1
D62
D63
D64
D65
D69
D79
D101
D103
INTRO & ENDING
START/STOP
TAP TEMPO
OTHER PARTS/TR
MUTE
OUT
LCD CONTRAST

I CPR P.C.B.

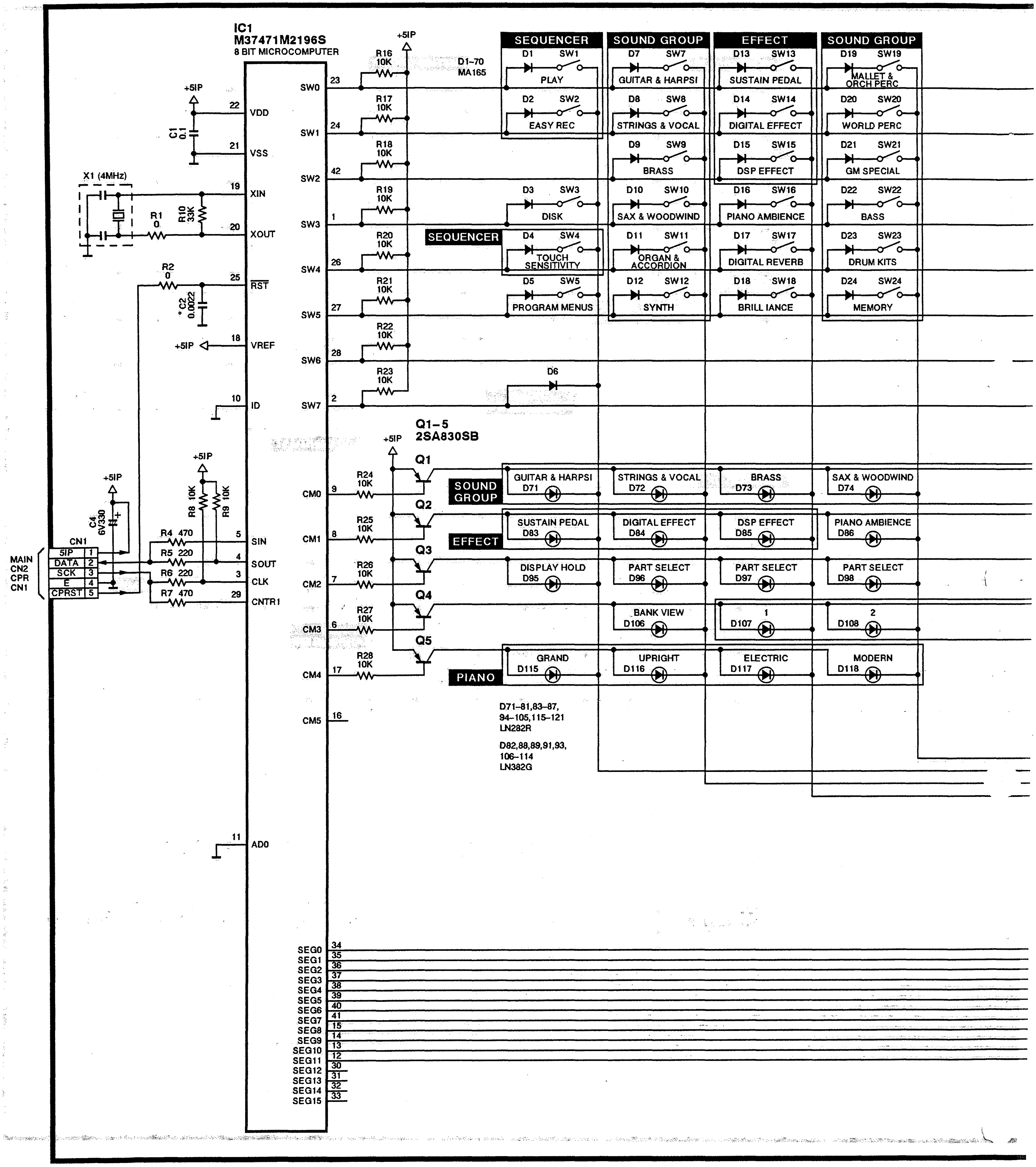

CN1
SW55
SW56
SW57
SW58
SW59
SW60
SW61
PANEL MEMORY
IC1
PART SELECT
TRANSPOSE
SW37
SW36
SW42
SW44
SW48
SW46
DISPLAY HOLD
CONDUCTOR
SW64
SW66
SW68
SW70
SW65
SW67
SW69
D65
D67
D70
D40
D43
D53
D96
D97
D98
D99
D100
D101
D102
D103
Q1
Q2
Q3
Q5
SYNTH
SW12
SW18
SW33
SW82
D104
D114
D115
D116
D117
D118
SEQUENCER
PIANO

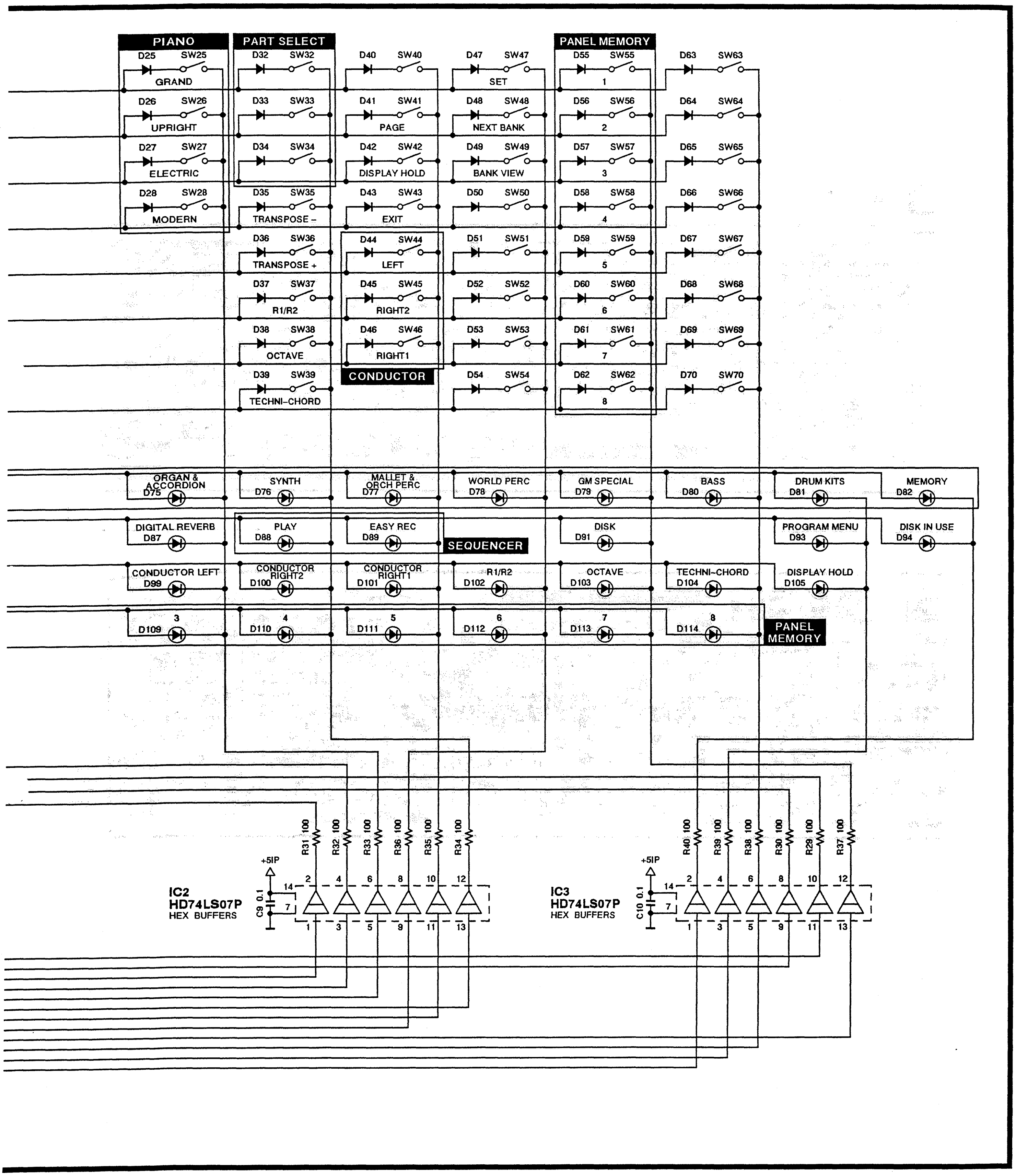
H CPL CIRCUIT


IC1
M37471M2196S
8 BIT MICROCOMPUTER
VDD
VSS
XIN
XOUT
RST
VREF
ID
SIN
SOUT
CLK
CNTR1
ROTA
ROTB
AD0
AD1
AD2
AD3
SW0
SW1
SW2
SW3
SW4
SW5
SW6
SW7
CM0
CM1
CM2
CM3
CM4
CM5
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
+5IP
C1 6V220
X1 (4MHz)
R1 0
R38 33K
R2 0
C2 0.0022
VREF
R3 100
C3 6V100
C4 6V330
R8 4.7K
R9 4.7K
R4 470
R5 220
R6 220
R7 470
MAIN CN2 CPR CN1
CN1
+5IP
DATA
SCK
E
CPRST
SW62 TEMPO/ PROGRAM
R10 4.7K
R11 4.7K
R12 47K
R13 47K
C5 0.001
C6 0.001
R14 100K
VR1 5KB
APC/ SEQUENCER VOLUME
C7 0.1
MAIN CN15
CN2
SUMR
SUML
E
ROUT
LOUT
VR2 5KB
MAIN VOLUME
INVL CN1
CN3
+5IP
+5IP
E
E
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
R21 10K
R22 10K
R23 10K
D1–61 MA165
D1 SW1 START/STOP
D2 SW2 SYNCHRO START
D3 SW3 TAP TEMPO
D4 SW4 HELP
D5 SW5 OTHER PARTS/TR
FADE
D6 SW6 IN
D7 SW7 OUT
D8 SW8 ONE TOUCH PLAY
D102 SW63 PIANO STYLIST
D10 SW10 FILL IN1
D11 SW11 FILL IN2
D12 SW12 1
D13 SW13 2
INTRO & ENDING
Q1–5 2SA830SB
Q1
Q2
Q3
Q4
Q5
R24 10K
R25 10K
R26 10K
R27 10K
R28 10K
INTRO & ENDING
D62 1
D63 2
MUSIC STYLE ARRANGER D73
VARIATION & MSA1 D74
RYTHM GROUP
SOUL & DISCO D80
BIG BAND & SWING D81
D88
AUTO PLAY CHORD MODE D89
RYTHM GROUP
ROCK & POPS D94
JAZZ & BLUES D95
D62–64,68,69,71–84, 86,87,90,94–99 LN282R
D65–67,70,85,88,89, 91–93,100,101 LN382G

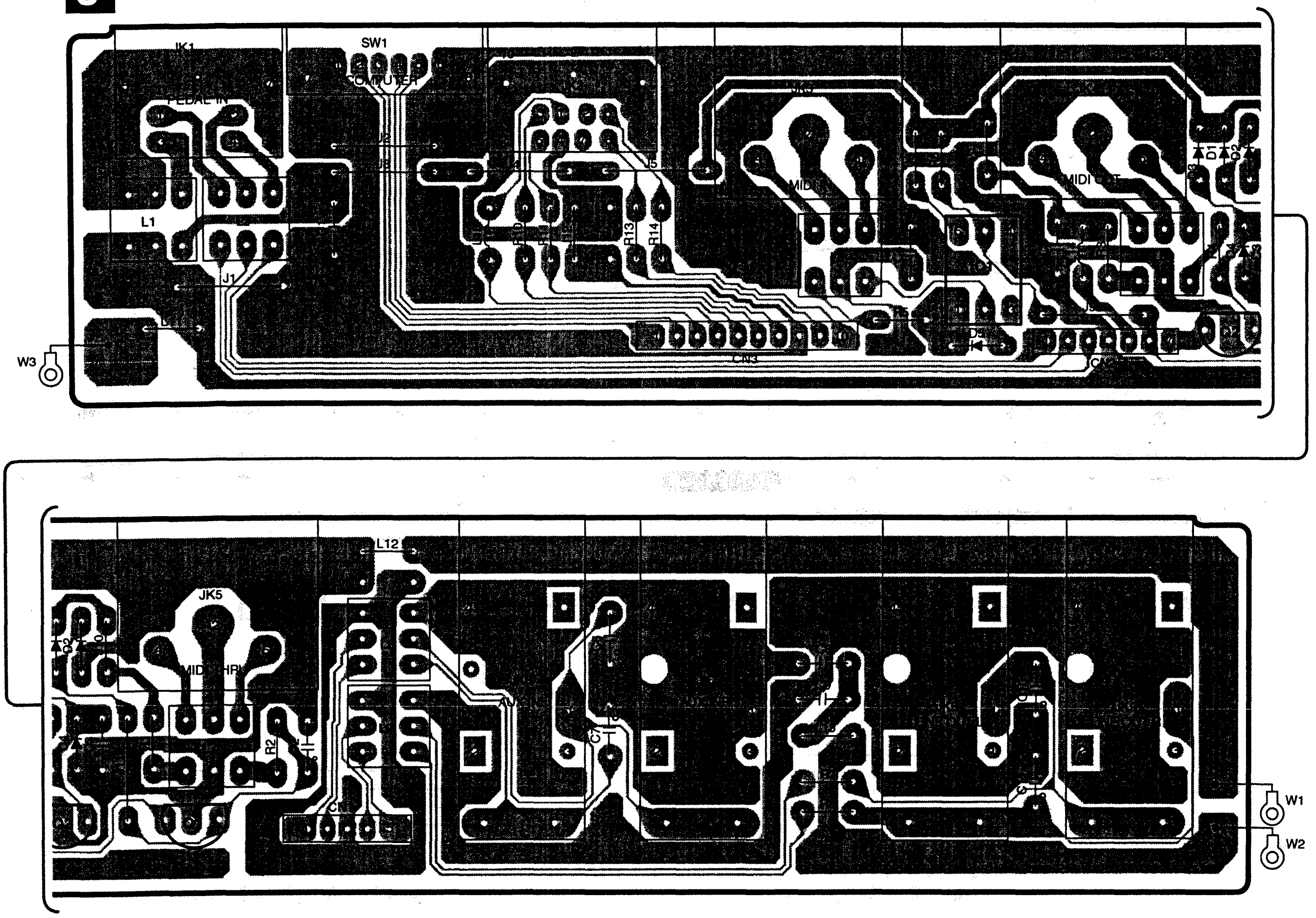

RHYTHM GROUP
D14 SW14 SOUL & DISCO
D15 SW15 BIG BAND & SWING
D16 SW16 USA TRAD
D17 SW17 MARCH & WALTZ
D18 SW18 SHOW TIME & TRAD DANCE
D19 SW19 MEMORY
D20 SW20 MUSIC STYLE ARRANGER
D21 SW21 1
D22 SW22 2
D23 SW23 3
D24 SW24 4
VARIATION & MSA
D25 SW25
D26 SW26 SOUND ARRANGER SPLIT POINT
D27 SW27 AUTO PLAY CHORD MODE
D28 SW28 AUTO PLAY CHORD ON/OFF
D29 SW29 SOLO PIANO
D30 SW30 SET
D31 SW31 ON/OFF
SOUND ARRANGER
RHYTHM GROUP
D32 SW32 ROCK & POP
D33 SW33 JAZZ & BLUES
D34 SW34 COUNTRY
D35 SW35 BALLAD
D36 SW36 LATIN & WORLD
D37 SW37 METRONOME
D44 SW44 ◀
D45 SW45 ▶
LCD CONTRAST
D46 SW46 AUTO SETTING
D47 SW47 BANK
D48 SW48 STOP/RECORD
D49 SW49
D50 SW50
D51 SW51
D52 SW52
D53 SW53
D54 SW54 MUTE
D55 SW55
D56 SW56
D57 SW57 MUTE
D58 SW58
D59 SW59
D103 SW60
D61 SW61
START/STOP
1 D64
2 D65
3 D66
4 D67
SYNCHRO START D68
OTHER PARTS/TR D69
PIANO STYLIST D103
VARIATION & MSA2 D75
VARIATION & MSA3 D76
VARIATION & MSA4 D77
FILL IN1 D78
FILL IN2 D79
D71
D72
FADE
USA TRAD D82
MARCH & WALTZ D83
SHOW TIME & TRAD DANCE D84
MEMORY D85
IN D86
OUT D87
AUTO PLAY CHORD ON/OFF D90
SOLO PIANO D91
SET D92
ON/OFF D93
SOUND ARRANGER
COUNTRY D96
BALLAD D97
LATIN & WORLD D98
METRONOME D99
AUTO SETTING D100
D101
R33 100
R32 100
R29 100
R30 100
R31 100
R37 100
R34 100
R35 100
R36 100
+5IP
+5IP
C9 0.1
C10 0.1
14
7
2 4 6 8 10 12
1 3 5 9 11 13
IC2
HD74LS07P
HEX BUFFERS
IC3
HD74LS07P
HEX BUFFERS

I CPR CIRCUIT

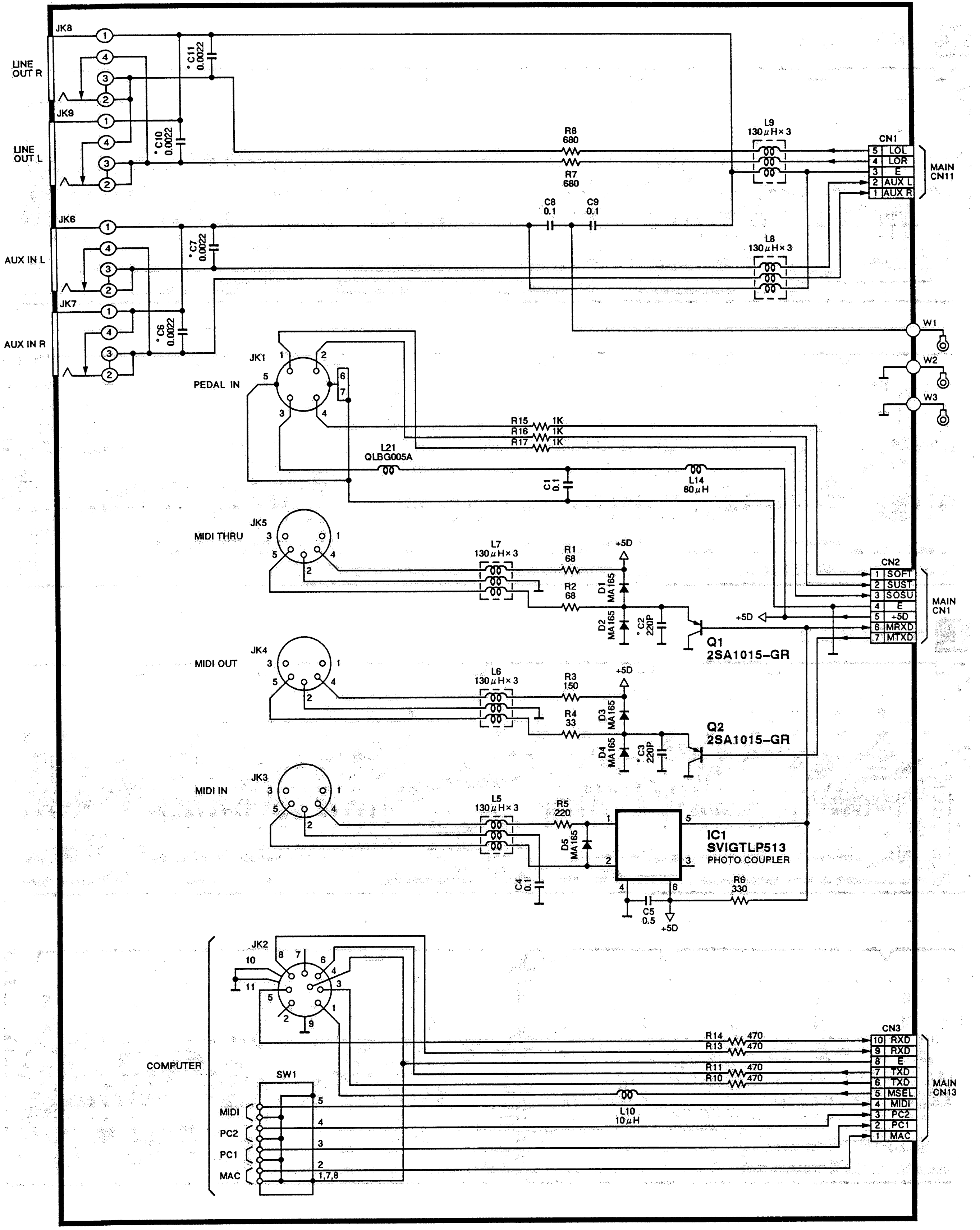

IC1
M37471M2196S
8 BIT MICROCOMPUTER
+5IP
VDD
VSS
C1 0.1
X1 (4MHz)
XIN
XOUT
R1 0
R10 33K
R2 0
RST
C2 0.0022
VREF
ID
AD0
+5IP
C4 6V330
R8 10K
R9 10K
R4 470
R5 220
R6 220
R7 470
SIN
SOUT
CLK
CNTR1
MAIN CN2
CPR CN1
CN1
5IP 1
DATA 2
SCK 3
E 4
CPRST 5
SW0
SW1
SW2
SW3
SW4
SW5
SW6
SW7
R16 10K
R17 10K
R18 10K
R19 10K
R20 10K
R21 10K
R22 10K
R23 10K
D1–70
MA165
SEQUENCER
SOUND GROUP
EFFECT
SOUND GROUP
D1 SW1 PLAY
D2 SW2 EASY REC
D3 SW3 DISK
D4 SW4 TOUCH SENSITIVITY
D5 SW5 PROGRAM MENUS
D6
D7 SW7 GUITAR & HARPSI
D8 SW8 STRINGS & VOCAL
D9 SW9 BRASS
D10 SW10 SAX & WOODWIND
D11 SW11 ORGAN & ACCORDION
D12 SW12 SYNTH
D13 SW13 SUSTAIN PEDAL
D14 SW14 DIGITAL EFFECT
D15 SW15 DSP EFFECT
D16 SW16 PIANO AMBIENCE
D17 SW17 DIGITAL REVERB
D18 SW18 BRILL IANCE
D19 SW19 MALLET & ORCH PERC
D20 SW20 WORLD PERC
D21 SW21 GM SPECIAL
D22 SW22 BASS
D23 SW23 DRUM KITS
D24 SW24 MEMORY
SEQUENCER
Q1–5
2SA830SB
Q1
Q2
Q3
Q4
Q5
CM0
CM1
CM2
CM3
CM4
CM5
R24 10K
R25 10K
R26 10K
R27 10K
R28 10K
SOUND GROUP
EFFECT
PIANO
GUITAR & HARPSI D71
STRINGS & VOCAL D72
BRASS D73
SAX & WOODWIND D74
SUSTAIN PEDAL D83
DIGITAL EFFECT D84
DSP EFFECT D85
PIANO AMBIENCE D86
DISPLAY HOLD D95
PART SELECT D96
PART SELECT D97
PART SELECT D98
BANK VIEW D106
1 D107
2 D108
GRAND D115
UPRIGHT D116
ELECTRIC D117
MODERN D118
D71–81,83–87, 94–105,115–121 LN282R
D82,88,89,91,93, 106–114 LN382G
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15


PIANO
D25 SW25 GRAND
D26 SW26 UPRIGHT
D27 SW27 ELECTRIC
D28 SW28 MODERN
PART SELECT
D32 SW32
D33 SW33
D34 SW34
D35 SW35 TRANSPOSE -
D36 SW36 TRANSPOSE +
D37 SW37 R1/R2
D38 SW38 OCTAVE
D39 SW39 TECHNI-CHORD
D40 SW40
D41 SW41 PAGE
D42 SW42 DISPLAY HOLD
D43 SW43 EXIT
D44 SW44 LEFT
D45 SW45 RIGHT2
D46 SW46 RIGHT1
CONDUCTOR
D47 SW47 SET
D48 SW48 NEXT BANK
D49 SW49 BANK VIEW
D50 SW50
D51 SW51
D52 SW52
D53 SW53
D54 SW54
PANEL MEMORY
D55 SW55 1
D56 SW56 2
D57 SW57 3
D58 SW58 4
D59 SW59 5
D60 SW60 6
D61 SW61 7
D62 SW62 8
D63 SW63
D64 SW64
D65 SW65
D66 SW66
D67 SW67
D68 SW68
D69 SW69
D70 SW70
ORGAN & ACCORDION D75
SYNTH D76
MALLET & ORCH PERC D77
WORLD PERC D78
GM SPECIAL D79
BASS D80
DRUM KITS D81
MEMORY D82
DIGITAL REVERB D87
PLAY D88
EASY REC D89
SEQUENCER
DISK D91
PROGRAM MENU D93
DISK IN USE D94
CONDUCTOR LEFT D99
CONDUCTOR RIGHT2 D100
CONDUCTOR RIGHT1 D101
R1/R2 D102
OCTAVE D103
TECHNI-CHORD D104
DISPLAY HOLD D105
3 D109
4 D110
5 D111
6 D112
7 D113
8 D114
PANEL MEMORY
R31 100
R32 100
R33 100
R36 100
R35 100
R34 100
+5IP
C9 0.1
IC2
HD74LS07P
HEX BUFFERS
2 4 6 8 10 12
14 7
1 3 5 9 11 13
R40 100
R39 100
R38 100
R30 100
R29 100
R37 100
+5IP
C10 0.1
IC3
HD74LS07P
HEX BUFFERS
2 4 6 8 10 12
14 7
1 3 5 9 11 13

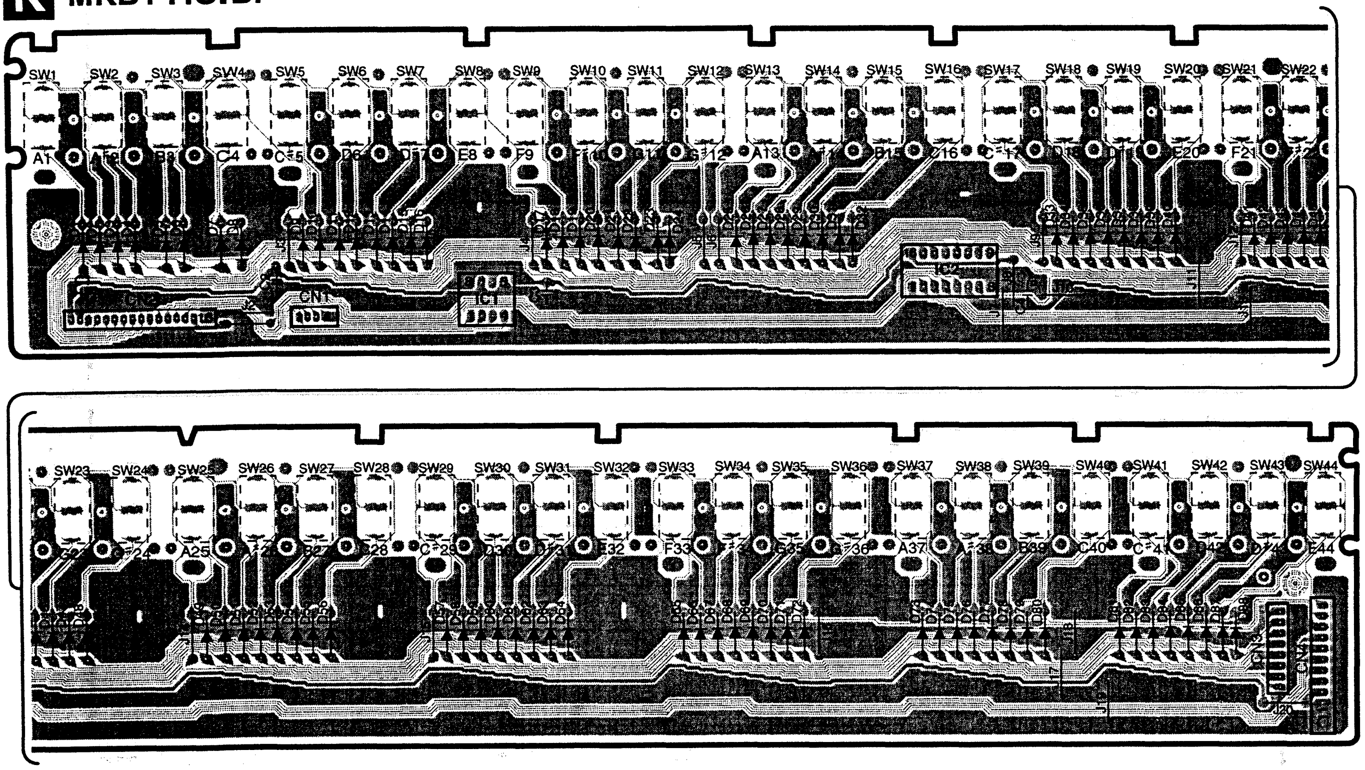
J JACK P.C.B.


JK1
PEDAL IN
SW1
COMPUTER
L1
J1
J2
J3
J5
R10
R11
R13
R14
MIDI IN
MIDI OUT
D1
D2
CN3
W3
JK5
MIDI THRU
R2
L12
C1
W1
W2

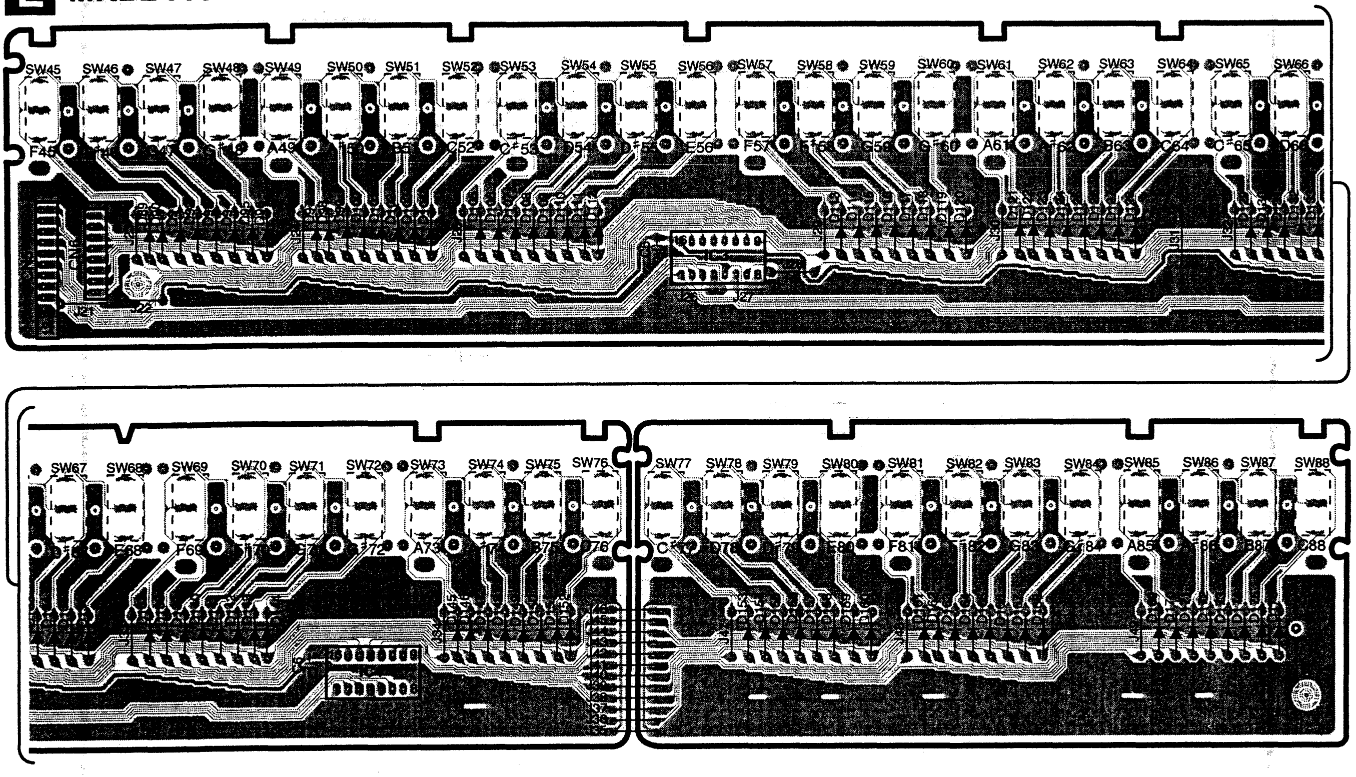
J JACK CIRCUIT


JK8
LINE OUT R
C11 0.0022
JK9
LINE OUT L
C10 0.0022
R8 680
R7 680
L9 130μH×3
CN1
5 LOL
4 LOR
3 E
2 AUX L
1 AUX R
MAIN CN11
JK6
AUX IN L
C7 0.0022
C8 0.1
C9 0.1
L8 130μH×3
JK7
AUX IN R
C6 0.0022
W1
W2
W3
JK1
PEDAL IN
R15 1K
R16 1K
R17 1K
L21 QLBG005A
C1 0.1
L14 80μH
JK5
MIDI THRU
L7 130μH×3
R1 68
R2 68
+5D
D1 MA165
D2 MA165
C2 220P
Q1 2SA1015-GR
CN2
1 SOFT
2 SUST
3 SOSU
4 E
5 +5D
6 MRXD
7 MTXD
MAIN CN1
JK4
MIDI OUT
L6 130μH×3
R3 150
R4 33
D3 MA165
D4 MA165
C3 220P
Q2 2SA1015-GR
JK3
MIDI IN
L5 130μH×3
R5 220
D5 MA165
C4 0.1
IC1 SVIGTLP513 PHOTO COUPLER
R6 330
C5 0.5
+5D
JK2
COMPUTER
SW1
MIDI
PC2
PC1
MAC
1,7,8
L10 10μH
R14 470
R13 470
R11 470
R10 470
CN3
10 RXD
9 RXD
8 E
7 TXD
6 TXD
5 MSEL
4 MIDI
3 PC2
2 PC1
1 MAC
MAIN CN13

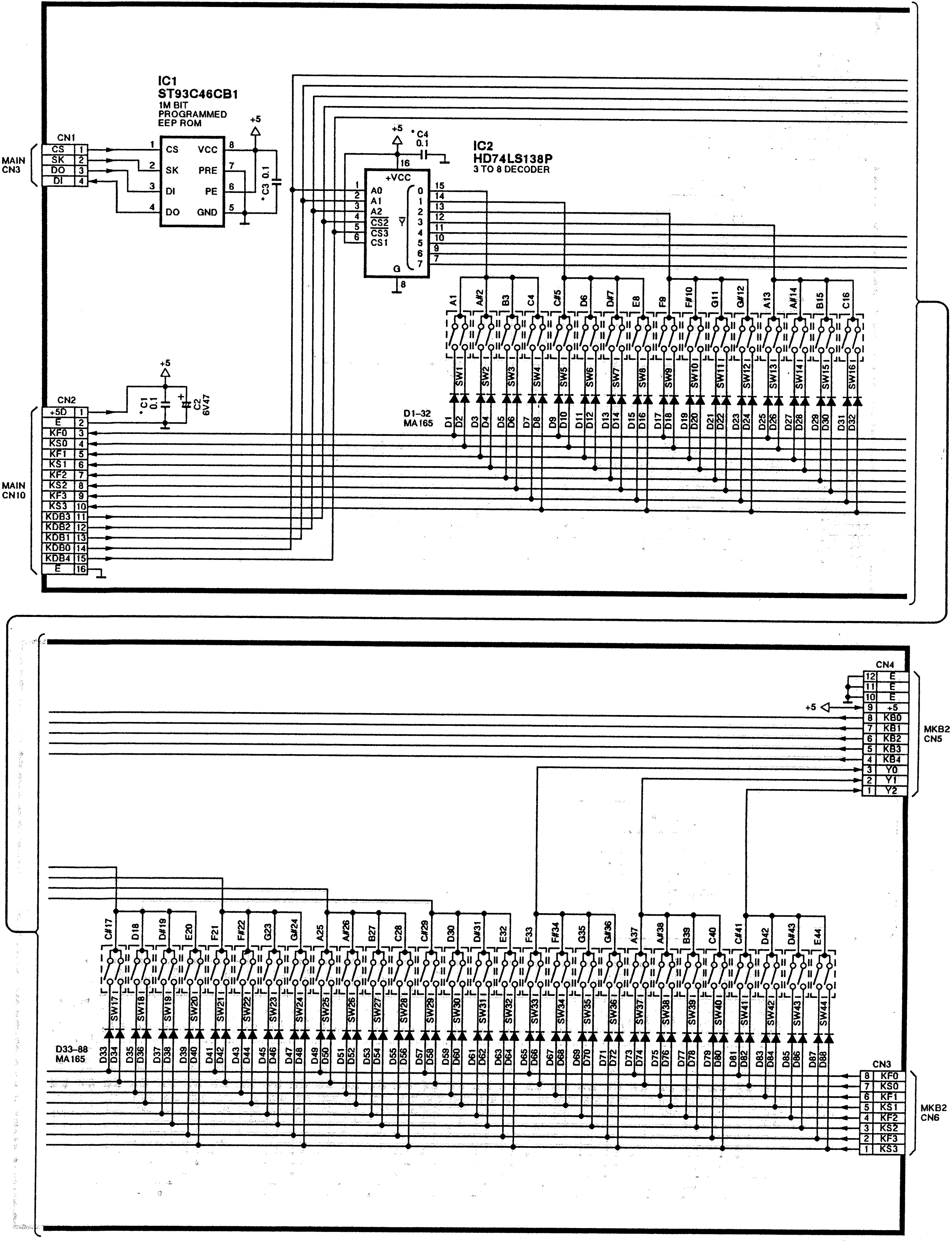
K MKB1 P.C.B.


SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
SW17
SW18
SW19
SW20
SW21
SW22
A1
C4
C♯5
D6
E8
F9
A13
B15
C16
E20
F21
CN1
CN2
IC1
IC2
SW23
SW24
SW25
SW26
SW27
SW28
SW29
SW30
SW31
SW32
SW33
SW34
SW35
SW36
SW37
SW38
SW39
SW40
SW41
SW42
SW43
SW44
A25
C♯29
E32
F33
A37
B39
C40
C♯41
E44
CN4

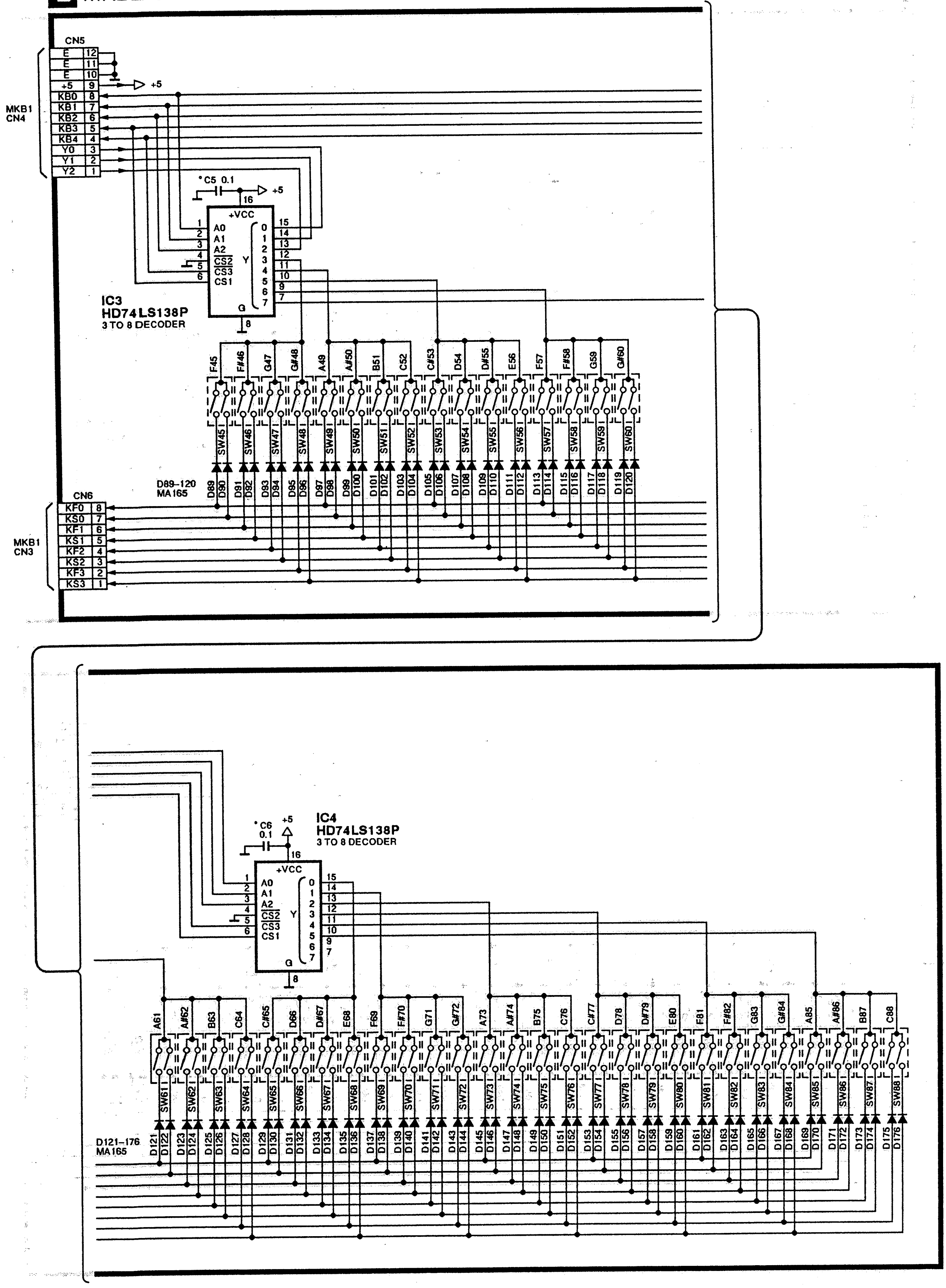
L MKB2 P.C.B.


SW45
SW46
SW47
SW48
SW49
SW50
SW51
SW52
SW53
SW54
SW55
SW56
SW57
SW58
SW59
SW60
SW61
SW62
SW63
SW64
SW65
SW66
F45
A49
C52
C♯53
E56
F57
A61
B63
C64
C♯65
CN5
SW67
SW68
SW69
SW70
SW71
SW72
SW73
SW74
SW75
SW76
SW77
SW78
SW79
SW80
SW81
SW82
SW83
SW84
SW85
SW86
SW87
SW88
E68
F69
A73
E80
F81
A85
C88

K MKB1 CIRCUIT


IC1
ST93C46CB1
1M BIT
PROGRAMMED
EEP ROM
CS
VCC
SK
PRE
DI
PE
DO
GND
+5
C3 0.1
CN1
MAIN CN3
CS 1
SK 2
DO 3
DI 4
IC2
HD74LS138P
3 TO 8 DECODER
+5
C4 0.1
+VCC
A0
A1
A2
CS2
CS3
CS1
G
A1
A#2
B3
C4
C#5
D6
D#7
E8
F9
F#10
G11
G#12
A13
A#14
B15
C16
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
D1-32
MA165
CN2
MAIN CN10
+5D 1
E 2
KF0 3
KS0 4
KF1 5
KS1 6
KF2 7
KS2 8
KF3 9
KS3 10
KDB3 11
KDB2 12
KDB1 13
KDB0 14
KDB4 15
E 16
C1 0.1
C2 6V47
CN4
MKB2 CN5
12 E
11 E
10 E
9 +5
8 KB0
7 KB1
6 KB2
5 KB3
4 KB4
3 Y0
2 Y1
1 Y2
C#17
D18
D#19
E20
F21
F#22
G23
G#24
A25
A#26
B27
C28
C#29
D30
D#31
E32
F33
F#34
G35
G#36
A37
A#38
B39
C40
C#41
D42
D#43
E44
SW17
SW18
SW19
SW20
SW21
SW22
SW23
SW24
SW25
SW26
SW27
SW28
SW29
SW30
SW31
SW32
SW33
SW34
SW35
SW36
SW37
SW38
SW39
SW40
SW41
SW42
SW43
SW44
D33-88
MA165
CN3
MKB2 CN6
8 KF0
7 KS0
6 KF1
5 KS1
4 KF2
3 KS2
2 KF3
1 KS3

L MKB2 CIRCUIT


CN5
E 12
E 11
E 10
+5 9
KB0 8
KB1 7
KB2 6
KB3 5
KB4 4
Y0 3
Y1 2
Y2 1
MKB1
CN4
+5
*C5 0.1
+5
16
+VCC
A0
A1
A2
CS2
CS3
CS1
Y
G
8
IC3
HD74LS138P
3 TO 8 DECODER
F45 F#46 G47 G#48 A49 A#50 B51 C52 C#53 D54 D#55 E56 F57 F#58 G59 G#60
SW45 SW46 SW47 SW48 SW49 SW50 SW51 SW52 SW53 SW54 SW55 SW56 SW57 SW58 SW59 SW60
D89–120
MA165
D89 D90 D91 D92 D93 D94 D95 D96 D97 D98 D99 D100 D101 D102 D103 D104 D105 D106 D107 D108 D109 D110 D111 D112 D113 D114 D115 D116 D117 D118 D119 D120
CN6
KF0 8
KS0 7
KF1 6
KS1 5
KF2 4
KS2 3
KF3 2
KS3 1
MKB1
CN3
*C6 0.1
+5
IC4
HD74LS138P
3 TO 8 DECODER
A61 A#62 B63 C64 C#65 D66 D#67 E68 F69 F#70 G71 G#72 A73 A#74 B75 C76 C#77 D78 D#79 E80 F81 F#82 G83 G#84 A85 A#86 B87 C88
SW61 SW62 SW63 SW64 SW65 SW66 SW67 SW68 SW69 SW70 SW71 SW72 SW73 SW74 SW75 SW76 SW77 SW78 SW79 SW80 SW81 SW82 SW83 SW84 SW85 SW86 SW87 SW88
D121–176
MA165
D121 D122 D123 D124 D125 D126 D127 D128 D129 D130 D131 D132 D133 D134 D135 D136 D137 D138 D139 D140 D141 D142 D143 D144 D145 D146 D147 D148 D149 D150 D151 D152 D153 D154 D155 D156 D157 D158 D159 D160 D161 D162 D163 D164 D165 D166 D167 D168 D169 D170 D171 D172 D173 D174 D175 D176

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL		SXPG229511	MAIN	1
○	RTL		SXPG229611A	CPL	1
○	RTL		SXPG229711A	CPR	1
○	RTL		SXPG229711B	JACK2	1
○	RTL		SXPG229611C	INVL	1
○	RTL		SXPG229911	JACK	1
○	RTL		SXPG229811A	AS INCLUDE ASUB	1
○	RTL	EN EK EZ EW EF EA EP EH XL XR XP XW	SXPG230411	ACP	1
○	RTL	M MC XM	SXPG230421	ACP	1
○	RTL	X XS XT XD	SXPG230451	ACP	1
	RTL		SXPG218221	PKB	1
	RTL		SXPG226611A	MKB1	1
	RTL		SXPG226611B	MKB2	1
○			EDMMR63B0F	LCD	1

MAIN MAIN CIRCUIT

	Ref. No.		Part No.	Description	P/S
	INTEGRATED CIRCUITS				
	IC1		MN1382QTX	RESET IC	1
○	IC2		QVIGPR702AX1	8M BIT FLASH ROM W/PROGRAM DISK	1
	IC3		TC7W14F	INVERTER	1
○	IC4		QVIGPR702AX1	8M BIT FLASH ROM W/PROGRAM DISK	1
○	IC5		QSIGX3C08005	8M BIT MASK ROM	1
○	IC6		TMP94C241AF	MAIN CPU	1
○	IC7		QSIGX3C08004	8M BIT MASK ROM	1
○	IC8		BR93LC56RFE2	1K BIT PROGRAMMED EEP ROM	1
	IC9		TC74VHC08F	QUAD 2 INPUT AND GATE	1
	IC10		TC7S08F	IC, CMOS LOGIC	1
	IC11, 13		M5M44265CJ6S	4M BIT DYNAMIC RAM	2
○	IC12		TC74HC138AF	3 TO 8 DECODER	1
○	IC14		QSIGX3C24004	24M BIT RHYTHM DATA ROM	1
	IC15		D72070GF3BE	8 BIT MICROCONTROLLER	1
○	IC16		M66271FP	LCD CONTROLER	1
	IC17		BA10393F	COMPARATOR	1
	IC20		TC7S04F	INVERTER	1
○	IC21		TC74HC74AF	DUAL D FLIP-FLOP	1
	IC22		TC7S08F	IC, CMOS LOGIC	1
	IC101		M5223FPE1	OPERATIONAL AMPLIFIER	1
	IC102		TC7W74F	INVERTER	1
○	IC103		TC203C220004	TONE GENERATOR LSI	1
○	IC104		QSIGU3C32542	32M BIT MASK ROM	1
○	IC105		QSIGU3C32541	32M BIT MASK ROM	1
	IC108		M5M44265CJ6S	4M BIT DYNAMIC RAM	1
○	IC109		TMS57070FFT	DIGITAL SIGNAL PROCESSOR	1
	IC111		M5M34051FP	BUS TRANSCEIVER	1
	IC119		TC7SU04F	INVERTER	1
	IC125		T7WU04F	TRIPLE INVERTER	1
	IC126		M5218AFP	OPERATIONAL AMPLIFIER	1
	IC127		PCM69AU	D/A CONVERTER	1
	IC129		M5218AFP	OPERATIONAL AMPLIFIER	1
	TRANSISTORS				
	Q1		2SD601AQ	TRANSISTOR	1
S	Q2		2SC1815GR	TRANSISTOR	1
	Q3		2SB709AR	TRANSISTOR	1
	Q4		2SD601AQ	TRANSISTOR	1
	Q5		2SB709AR	TRANSISTOR	1
	Q6~8		2SD601AQ	TRANSISTOR	3
	Q9	⚠	2SB946P	TRANSISTOR	1
S	Q10		2SC1815GR	TRANSISTOR	1
	Q100		2SD601AQ	TRANSISTOR	1
	Q101		2SD592ARS	TRANSISTOR	1
	DIODES				
	D1, 2		MA110	DIODE	2
	D3		MA8030L	ZENER, 2.9V	1
	D4		MA110	DIODE	1
	D5		MA151WK	DIODE	1
	D6, 7		MA110	DIODE	2
	D8		MA8082M	ZENER, 8.2V	1
	D9		MA110	DIODE	1
	D10		MA8051L	ZENER, 5.1V	1
	D11, 12		MA110	DIODE	2
	D13		MA1270	ZENER	1
	D14, 15		SVDGERA1502	RECTIFIER	2
	D18		MA738	DIODE	1
○	D19		MA1240TR	ZENER	1
	D20	⚠	MA2062LF	ZENER, 6.2V	1
	D100		MA8056	ZENER, 5.6V	1
	D101		MA110	DIODE	1
	D102		MA151WK	DIODE	1
	D103, 104		MA110	DIODE	2
	D105		MA151WK	DIODE	1
	D106, 107		MA110	DIODE	2
	OSCILLATORS				
○	X1		QSXG1A1000A	10MHz, CRYSTAL OSCILLATOR	1
	X3		QSXG2F2400A	24MHz, CERAMIC OSCILLATOR	1
	X100		QSXG2F0100DA	1MHz, CERAMIC OSCILLATOR	1
	X101		QSXG1I3386A	33.8688MHz, CRYSTAL OSCILLATOR	1
	X102		QSXG1A2500A	25MHz, QUARTZ OSCILLATOR	1
	COMPONENT COMBINATIONS				
	Z1, 2		EXBV8V101J	100Ω×4	2
	Z3		EXBV8V472J	4.7kΩ×4	1

Ref. No.	Part No.	Description	P/S
Z4~7	EXBV8V101J	100Ω×4	4
Z13, 14	EXBS8V472J	4.7kΩ×4	2
Z15~20	EXBV8V472J	4.7kΩ×4	6
Z21	EXBV8V102J	1kΩ×4	1
Z22~24	EXBS8V470J	47Ω×4	3
Z25	EXBS8V471J	470Ω×4	1
Z26	EXBS8V102J	1kΩ×4	1
Z100, 101	EXBS8V471J	470Ω×4	2
Z102	EXBV8V471J	470Ω×4	1
Z103, 104	EXBV8V472J	4.7kΩ×4	2
Z105~119	EXBV8V102J	1kΩ×4	15
Z120	EXBV8V221J	220Ω×4	1

COILS

L1	QLQGT1B100MA	10μH	1
L2	QLQGT1T121SA	120μH	1
○ L3~11, 13~15	BK2125LM252T	COIL	12
○ R134, 146, 147, 149, 150	BK2125LM252T	COIL	5

IC PROTECTOR

IP1 ⚠	ICP-N38T104	IC PROTECTOR	1

WIRES

W1~5	QEXGRA01005A	WIRE	5

RESISTORS

Ref. No.	Part No.	Description	P/S
C167	ERJ6GEY0R00V	0Ω	1
JP2, 4, 11, 13, 102, 103, 105, 107	ERJ6GEY0R00V	0Ω	8
L3, 17	ERD25V0R00	0Ω	2
R1, 2	ERJ6GEYJ471V	470Ω	2
R3~7	ERJ6GEYJ472V	4.7kΩ	5
R8	ERJ6GEYJ102V	1kΩ	1
R9	ERJ6GEYJ104V	100kΩ	1
R10	ERJ6GEYJ103V	10kΩ	1
R11	ERJ6GEYJ104V	100kΩ	1
R13	ERJ6GEYJ472V	4.7kΩ	1
R14	ERJ6GEYJ104V	100kΩ	1
R15	ERJ6GEYJ101V	100Ω	1
R16	ERJ6GEYJ472V	4.7kΩ	1
R17	ERJ6GEYJ101V	100Ω	1
R18	ERJ6GEYJ472V	4.7kΩ	1
R19	ERJ6GEYJ102V	1kΩ	1
R20	ERJ6GEYJ221V	220Ω	1
R21	ERJ6GEYJ472V	4.7kΩ	1
R22	ERJ6GEYJ104V	100kΩ	1
R23	ERJ6GEYJ102V	1kΩ	1
R24	ERJ6GEYJ222V	2.2kΩ	1
R25	ERJ6GEYJ102V	1kΩ	1
R26	ERJ6GEYJ472V	4.7kΩ	1
R27	ERJ6GEY0R00V	0Ω	1
R29, 30	ERJ6GEYJ472V	4.7kΩ	2
R31	ERJ6GEY0R00V	0Ω	1
R32	ERJ6GEYJ104V	100kΩ	1
R33~35	ERJ6GEYJ102V	1kΩ	3
R36	ERJ6GEYJ472V	4.7kΩ	1
R37	ERJ6GEYJ682V	6.8kΩ	1
R38	ERJ6GEYJ101V	100Ω	1
R39~41	ERJ6GEYJ103V	10kΩ	3
R42	ERJ6GEYJ151V	150Ω	1
R43	ERJ6GEYJ105V	1MΩ	1
R44	ERJ6GEY0R00V	0Ω	1
R45	ERJ6GEYJ101V	100Ω	1
R46~49	ERJ6GEY0R00V	0Ω	4
R50	ERJ6GEYJ471V	470Ω	1
R51	ERJ6GEYJ101V	100Ω	1
R52, 53	ERJ6GEYJ472V	4.7kΩ	2
R56	ERJ6GEY0R00V	0Ω	1
R59	ERJ6GEYJ682V	6.8kΩ	1
R60	ERJ6GEYJ102V	1kΩ	1
R62	ERJ6GEYJ332V	3.3kΩ	1
R63	ERJ6GEYJ101V	100Ω	1
R64	ERJ6GEYJ470V	47Ω	1
R65~67	ERJ6GEYJ222V	2.2kΩ	3
R68	ERJ6GEYJ102V	1kΩ	1
R69	ERJ6GEYJ222V	2.2kΩ	1
R70	ERJ6GEYJ124V	120kΩ	1
R71	ERJ6GEYJ103V	10kΩ	1
R72	ERJ6GEYJ332V	3.3kΩ	1
R73, 74	ERJ6GEYJ152V	1.5kΩ	2
R75	ERJ6GEYJ154V	150kΩ	1
R77	ERJ6GEYJ102V	1kΩ	1
R78	ERJ6GEYJ474V	470kΩ	1
R79	ERJ6GEYJ334V	330kΩ	1
R80	ERJ6GEYJ471V	470Ω	1
R81	ERJ6GEYJ333V	33kΩ	1
R82	ERJ6GEYJ472V	4.7kΩ	1
R83	ERJ6GEYJ470V	47Ω	1
R84	ERJ6GEYJ681V	680Ω	1
R85	ERJ6GEYJ151V	150Ω	1
R86	ERJ6GEYJ681V	680Ω	1
R87	ERJ6GEYJ151V	150Ω	1
R88	ERJ6GEYJ102V	1kΩ	1
R89	ERJ6GEY0R00V	0Ω	1
R90	ERJ6GEYJ101V	100Ω	1
R91, 92	ERJ6GEYJ102V	1kΩ	2
○ R93 ⚠	ERG2SJ222E	2.2kΩ, 2W, FLAME-PROOF	1
○ R94 ⚠	ERG2SJ100E	10Ω, 2W, FLAME-PROOF	1
○ R95 ⚠	ERG2SJ100E	10Ω, 2W, FLAME-PROOF	1
R96~100	ERJ6GEYJ471V	470Ω	5
R101, 102	ERJ6GEYJ102V	1kΩ	2
R103	ERJ6GEYJ105V	1MΩ	1
R104~108	ERJ6GEYJ472V	4.7kΩ	5
R109, 110	ERJ6GEYJ102V	1kΩ	2
R111	ERJ6GEYJ105V	1MΩ	1
R112	ERJ6GEYJ102V	1kΩ	1
R113	ERJ6GEYJ472V	4.7kΩ	1
R114, 115	ERJ6GEYJ101V	100Ω	2
R116~118	ERJ6GEYJ471V	470Ω	3
R119	ERJ6GEYJ102V	1kΩ	1
R120	ERJ6GEYJ563V	56kΩ	1
R121	ERJ6GEYJ563V	56kΩ	1
R122, 123	ERJ6GEYJ332V	3.3kΩ	2
R124~127	ERJ6GEYJ682V	6.8kΩ	4
R128	ERJ6GEYJ105V	1MΩ	1
R129	ERJ6GEY0R00V	0Ω	1
R130	ERJ6GEYJ223V	22kΩ	1
R131, 132	ERJ6GEYJ682V	6.8kΩ	2
R133	ERJ6GEYJ223V	22kΩ	1
R135, 137	ERJ6GEYJ472V	4.7kΩ	2
R138	ERJ6GEYJ471V	470Ω	1
R139	ERJ6GEYJ221V	220Ω	1
R141	ERJ6GEYJ471V	470Ω	1
R142~145	ERJ6GEYJ102V	1kΩ	4
R151	ERJ6GEYJ471V	470Ω	1
R152	ERD25V0R00	0Ω	1
R153, 154	ERJ6GEYJ471V	470Ω	2
R155~157	ERD25V0R00	0Ω	3

CAPACITORS

C1, 2	ECUV1H101JG	100pF	2

	Ref. No.	Part No.	Description	P/S
	C3, 4	ECUV1H104ZFX	0.1μF	2
	C5	ECUV1H103KBG	0.01μF	1
	C6	ECUV1H104ZFX	0.1μF	1
	C7	ECUV1H332KB	0.0033μF	1
	C8	ECUV1H104ZFX	0.1μF	1
	C9	ECUV1C224KBX	0.22μF	1
	C10~16	ECUV1H104ZFX	0.1μF	7
	C17	ECUV1H100DCN	10pF	1
	C18	ECEA1CKA100	10μF, 16V	1
	C19	ECUV1H100DCN	10pF	1
	C20	ECUV1H104ZFX	0.1μF	1
	C21	ECUV1E473KB	0.047μF	1
	C22~30	ECUV1H104ZFX	0.1μF	9
	C31	ECUV1H101JG	100pF	1
	C32, 35	ECUV1H104ZFX	0.1μF	2
	C36	ECUV1H223KBX	0.022μF	1
	C37	ECUV1H182JX	0.0018μF	1
	C38, 39	ECUV1H104ZFX	0.1μF	2
	C40, 41	ECUV1H333KBX	0.033μF	2
	C42, 45	ECUV1H104ZFX	0.1μF	2
	C46	EECS5R5V105	1F, 5.5V, MEMORY BACK-UP	1
	C47	ECA0JM221	220μF, 6.3V	1
	C48	ECEA1CKA100	10μF, 16V	1
	C49	ECUV1H104ZFX	0.1μF	1
○	C50	ECA1JM220B	22μF, 63V	1
	C51	ECEA1HKA010	1μF, 50V	1
	C52	ECEA1CKA100	10μF, 16V	1
	C53	ECEA1HKA010	1μF, 50V	1
	C54	ECEA1CKA100	10μF, 16V	1
	C55	ECUV1H222KX	0.0022μF	1
	C56	ECUV1H101JG	100pF	1
	C57	ECUV1H682KBG	0.0068μF	1
	C58	ECQV1H104JM	0.1μF	1
○	C59	ECA2AM220B	22μF, 100V	1
	C60	ECUV1H101JG	100pF	1
	C62	ECUV1E473KB	0.047μF	1
	C63	ECA0JM102	1000μF, 6.3V	1
	C65~67	ECUV1H104ZFX	0.1μF	3
	C68	ECUV1H331JG	330pF	1
	C69	ECEA0JKA331	100μF, 6.3V	1
	C70~72	ECUV1H104ZFX	0.1μF	3
	C73	ECUV1H101JG	100pF	1
	C74	ECUV1H333KBX	0.033μF	1
○	C75	QCBG1H104ZFA	0.1μF	1
	C78	ECUV1H104ZFX	0.1μF	1
	C100~104	ECUV1H101JG	100pF	5
	C105, 107	ECUV1H060DCN	6pF	2
	C108~112	ECUV1H104ZFX	0.1μF	5
	C113	ECEA0JKA470	47μF, 6.3V	1
	C114~124	ECUV1H104ZFX	0.1μF	11
	C127	ECUV1H104ZFX	0.1μF	1
	C130, 131	ECUV1H100DCN	10pF	2
	C132, 135	ECUV1H104ZFX	0.1μF	2
	C140, 142	ECUV1H104ZFX	0.1μF	2
	C144	ECRF1H104ZF	0.1μF	1
	C145	ECA1CM101	100μF, 16V	1
	C147, 148	ECEA1HKN010	1μF, 50V	2
	C149	ECUV1H101JG	100pF	1
	C150	ECUV1H104ZFX	0.1μF	1
	C151	ECEA0JKA101	100μF, 6.3V	1
	C152	ECEA1CKA100	10μF, 16V	1
	C153~155	ECUV1H104ZFX	0.1μF	3
	C156	ECUV1H101JG	100pF	1
	C157	ECUV1H104ZFX	0.1μF	1
	C158, 159	ECUV1H221JG	220pF	2
	C160, 161	ECA1CM101	100μF, 16V	2
	C162, 163	ECUV1H681JG	680pF	2
	C164~166	ECEA1CKA100	10μF, 16V	3

CPL CONTROL PANEL LEFT CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M37471M2196S	8 BIT MICROCOMPUTER	1
	IC2, 3	HD74LS07P	HEX BUFFERS	2
	TRANSISTORS			
	Q1~5	2SA830SB	TRANSISTOR	5
	DIODES			
	D1~8, 10~37, 44~61, 102	MA165	DIODE	55
	D62~64, 68, 69, 71~84, 86, 87, 90, 94~99	LN282R	LED (RED)	28
	D65~67, 85, 88, 89, 91~93, 100, 101, 103	LN382G	LED (GREEN)	12
	OSCILLATOR			
	X1	EF0EC4004A3	4MHz, CERAMIC OSCILLATOR	1
	SWITCHES			
	S1~8, 10~37, 44~61, 63	EVQ21507K	PUSH SWITCH	55
	S62	QSRGT002AA	ENCODER SWITCH	1
	VARIABLE RESISTORS			
	VR1	QRVG25N01B53	5kΩ B, APC/SEQUENCER VOLUME	1
	VR2	QRVG25P01B53	5kΩ B, MAIN VOLUME	1
	RESISTORS			
	R1, 2	ERDS2T0	0Ω, 1/4W	2
	R3	ERDS2TJ101	100Ω	1
	R4	ERDS2TJ471	470Ω	1
	R5, 6	ERDS2TJ221	220Ω	2
	R7	ERDS2TJ471	470Ω	1
	R8~11	ERDS2TJ472	4.7kΩ	4
	R12, 13	ERDS2TJ473	47kΩ	2
	R14	ERDS2TJ104	100kΩ	1
	R16~28	ERDS2TJ103	10kΩ	13
	R29~37	ERDS2TJ101	100Ω	9
	R38	ERDS2TJ333	33kΩ	1
	CAPACITORS			
	C1	ECEA0JKA221	220μF, 6.3V	1
	C2	ECBA1C222MR	0.0022μF	1
	C3	ECEA0JKS101	100μF, 6.3V	1
	C4	ECEA0JKA331	330μF, 6.3V	1
	C5, 6	ECBA1H102KB	0.001μF	2
○	C7	QCBG1H104ZFA	0.1μF	1
○	C8~10	QCBG1H104ZFA	0.1μF	3

CPR CONTROL PANEL RIGHT CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	M37471M2196S	8 BIT MICROCOMPUTER	1
IC2, 3	HD74LS07P	HEX BUFFERS	2
TRANSISTORS			
Q1~5	2SA830SB	TRANSISTOR	5
DIODES			
D1~28, 32~70,	MA165	DIODE	67
D71~81, 83-87, 94~105, 115~118	LN282R	LED (RED)	32
D82, 88, 89, 91, 93, 106~114	LN382G	LED (GREEN)	14
OSCILLATOR			
X1	EF0EC4004A3	4MHz, CERAMIC OSCILLATOR	1
SWITCHES			
S1~5, 7~28, 32~70	EVQ21507K	PUSH SWITCH	66
RESISTORS			
R1, 2	ERDS2T0	0Ω, 1/4W	2
R4	ERDS2TJ471	470Ω	1
R5, 6	ERDS2TJ221	220Ω	2
R7	ERDS2TJ471	470Ω	1
R8, 9	ERDS2TJ103	10kΩ	2
R10	ERDS2TJ333	33kΩ	1
R16~28	ERDS2TJ103	10kΩ	13
R29~40	ERDS2TJ101	100Ω	12
CAPACITORS			
○ C1	QCBG1H104ZFA	0.1μF	1
C2	ECBA1C222MR	0.0022μF	1
C4	ECEA0JKA331	330μF, 6.3V	1
○ C9	QCBG1H104ZFA	0.1μF	
○ C10	QCBG1H104ZFA	0.1μF	1

JACK2 JACK2 CIRCUIT

Ref. No.	Part No.	Description	P/S
DIODE			
D2	SEL4214RLC05	LED, POWER INDICATOR	1
COIL			
L1	QLQGT3T131TA	130μH×3	1
JACKS			
○ JK1	QJJG010AA	HEADPHONE1	1
○ JK2	QJJG010AA	HEADPHONE2	1
WIRE			
W1	QEXGRA01010J	WIRE	1
RESISTORS			
R1~4 ⚠	ERG1SJ470	47Ω, 1W, FLAME-PROOF	4

Ref. No.	Part No.	Description	P/S
CAPACITORS			
○ C1	QCBG1H473ZFA	0.047μF	1
○ C2	QCBG1H473ZFA	0.047μF	1
○ C3	QCBG1H104ZFA	0.1μF	1

INVL INVERTER L CIRCUIT

Ref. No.	Part No.	Description	P/S
TRANSISTORS			
Q1, 2	2SD592ARS	TRANSISTOR	2
TRANSFORMER			
T1 ⚠	QTDG003A	TRANSFORMER	1
RESISTORS			
R1, 2	ERDS2TJ562	5.6kΩ	2
CAPACITORS			
C1	ECA0JM102	1000μF, 6.3V	1
C2	ECQB1H473JF	0.047μF	1
S C3	ECCD3F180JGE	18pF	1

JACK JACK CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUIT			
IC1	SVIGTLP513	PHOTO COUPLER	1
TRANSISTORS			
S Q1, 2	2SA1015-GR	2SA933STRS (SUB. PART)	2
DIODES			
D1~5	MA165	DIODE	5
COILS			
L5~9	QLQGT3T131TA	130μH×3	5
L10	QLQGT1B100MA	10μH	1
L14	QLQGT1B800MA	80μH	1
L21	QLBG005A	COIL	1
JACKS			
JK1	QJSG007AA	PEDAL IN	1
○ JK2	QJSG018AA	COMPUTER	1
JK3	QJSG016AA	MIDI IN	1
JK4	QJSG016AA	MIDI OUT	1
JK5	QJSG016AA	MIDI THRU	1
JK6	QJJG003AA	AUX IN L	1
JK7	QJJG003AA	AUX IN R	1
JK8	QJJG003AA	LINE OUT R	1
JK9	QJJG003AA	LINE OUT L	1
SWITCH			
S1	QSSGT011AA	SLIDE SWITCH	1

	Ref. No.		Part No.	Description	P/S
	WIRES				
	W1~3		QEXGRA01005A	WIRE	3
	RESISTORS				
	R1, 2		ERDS2TJ680	68Ω	2
	R3		ERDS2TJ151	150Ω	1
	R4		ERDS2TJ330	33Ω	1
	R5		ERDS2TJ221	220Ω	1
	R6		ERDS2TJ331	330Ω	1
	R7, 8		ERDS2TJ681	680Ω	2
	R15~17		ERDS2TJ102	1kΩ	3
	R10, 11, 13, 14		ERDS2TJ471	470Ω	4
	CAPACITORS				
○	C1		QCBG1H104ZFA	0.1μF	1
	C2, 3		ECCR1H221J	220pF	2
○	C4		QCBG1H104ZFA	0.1μF	1
○	C5		QCBG1H104ZFA	0.1μF	1
	C6, 7, 10, 11		ECBA1C222MR	0.0022μF	4
○	C8		QCBG1H104ZFA	0.1μF	1
○	C9		QCBG1H104ZFA	0.1μF	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.		Part No.	Description	P/S
	INTEGRATED CIRCUITS				
	IC1~8		M5218AL	OPERATIONAL AMPLIFIER	8
	IC9		SVIGM5238L	OPERATIONAL AMPLIFIER	1
	TRANSISTORS				
S	Q1		2SC1815GR	TRANSISTOR	1
	Q2		2SD2374A-P	TRANSISTOR	1
S	Q3		2SA1015-GR	2SA933STRS (SUB. PART)	1
	Q4		2SB1548A-P	TRANSISTOR	1
S	Q9		2SC1815GR	TRANSISTOR	1
S	Q10, 11		2SA1015-GR	2SA933STRS (SUB. PART)	2
	Q12		2SD592ARS	TRANSISTOR	1
	Q13		2SB621ARS	TRANSISTOR	1
	Q14		2SD592ARS	TRANSISTOR	1
	Q15		2SB621ARS	TRANSISTOR	1
○	Q16	⚠	FX30KMJ-3	FET	1
○	Q17	⚠	FS30KMJ-3	FET	1
○	Q18	⚠	FX30KMJ-3	FET	1
○	Q19	⚠	FS30KMJ-3	FET	1
S	Q20~24		2SC1815GR	TRANSISTOR	5
S	Q25		2SA1015-GR	2SA933STRS (SUB. PART)	1
S	Q26~28		2SC1815GR	TRANSISTOR	3
S	Q29		2SA1015-GR	2SA933STRS (SUB. PART)	1
	DIODES				
	D1, 2		SVDGERA1502	RECTIFIER	2
S	D3, 5, 7, 9	⚠	SVDS3V20	RECTIFIER	4
	D11		SVDGERA1502	RECTIFIER	1
	D12, 13		MA4160	ZENER, 16.0V	2
	D14, 15		MA4180	ZENER, 18V	2
	D20		EK04	DIODE	1
	D21		MA165	DIODE	1
	D22		EK04	DIODE	1
	D23, 24		MA165	DIODE	2
	D25, 26		MA4220M	ZENER, 22V	2

	Ref. No.		Part No.	Description	P/S
	COILS				
	L1~4		QLBG005A	COIL	4
	L5		QLQGT3T131TA	130μHX3	1
	L6		QLQGT1B800MA	80μH	1
○	L7		QLQGT1D600MA	60μH	1
○	L8		QLQGT1D600MA	60μH	1
	IC PROTECTORS				
	IP3, 4	⚠	ICP-N75T104	IC PROTECTOR	2
	IP5, 6	⚠	ICP-N10T104	IC PROTECTOR	2
	IP7, 8	⚠	ICP-N75T104	IC PROTECTOR	2
	WIRES				
	W1		QEXGRA01010J	WIRE	1
	W2		QEXGRA01005A	WIRE	1
	VARIABLE RESISTOR				
○	VR1		QRNG0681C102	1kΩ	1
	RESISTORS				
	R1, 2		ERDS2TJ103	10kΩ	2
	R3, 4		ERDS2TJ332	3.3kΩ	2
	R5, 6		ERDS2TJ103	10kΩ	2
	R9		ERDS2TJ104	100kΩ	1
	R10		ERDS2TJ473	47kΩ	1
	R11		ERDS2TJ103	10kΩ	1
	R12		ERDS2TJ332	3.3kΩ	1
	R13		ERDS2TJ103	10kΩ	1
	R14		ERDS2TJ332	3.3kΩ	1
	R15		ERDS2TJ154	150kΩ	1
	R16		ERDS2TJ334	330kΩ	1
	R18		ERDS2TJ220	22Ω	1
	R19		ERDS2TJ222	2.2kΩ	1
	R20	⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, FUSE TYPE	1
	R21	⚠	ERD2FCVG220	22Ω, 1/4W, FUSE TYPE	1
	R22		ERDS2TJ154	150kΩ	1
	R23		ERDS2TJ334	330kΩ	1
	R24		ERDS2TJ220	22Ω	1
	R25		ERDS2TJ222	2.2kΩ	1
	R26	⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, FUSE TYPE	1
	R27	⚠	ERD2FCVG220	22Ω, 1/4W, FUSE TYPE	1
	R28, 29	⚠	ERQ2CJP2R0S	2Ω, 2W, FUSE TYPE	2
	R30		ERDS2TJ472	4.7kΩ	1
	R31		ERDS2TJ332	3.3kΩ	1
	R32		ERDS2TJ823	82kΩ	1
	R33		ERDS2TJ152	1.5kΩ	1
	R34		ERDS2TJ104	100kΩ	1
	R35		ERDS2TJ182	1.8kΩ	1
	R36		ERDS2TJ104	100kΩ	1
	R37		ERDS2TJ182	1.8kΩ	1
	R38		ERDS2TJ104	100kΩ	1
	R39		ERDS2TJ152	1.5kΩ	1
	R40		ERDS2TJ104	100kΩ	1
	R41		ERDS2TJ471	470Ω	1
	R42		ERDS2TJ224	220kΩ	1
	R43		ERDS2TJ472	4.7kΩ	1
	R44		ERDS2TJ332	3.3kΩ	1
	R45		ERDS2TJ823	82kΩ	1
	R46		ERDS2TJ152	1.5kΩ	1
	R47		ERDS2TJ104	100kΩ	1
	R48		ERDS2TJ182	1.8kΩ	1
	R49		ERDS2TJ104	100kΩ	1
	R50		ERDS2TJ182	1.8kΩ	1
	R51		ERDS2TJ104	100kΩ	1

	Ref. No.	Part No.	Description	P/S
	R52	ERDS2TJ152	1.5kΩ	1
	R53	ERDS2TJ104	100kΩ	1
	R54	ERDS2TJ471	470Ω	1
	R55	ERDS2TJ224	220kΩ	1
	R56	ERDS2TJ393	39kΩ	1
	R57	ERDS2TJ224	220kΩ	1
	R58	ERDS2TJ222	2.2kΩ	1
	R59	ERDS2TJ393	39kΩ	1
	R60	ERDS2TJ104	100kΩ	1
	R61	ERDS2TJ105	1MΩ	1
	R62	ERDS2TJ222	2.2kΩ	1
	R65	ERDS2TJ393	39kΩ	1
	R66	ERDS2TJ224	220kΩ	1
	R67	ERDS2TJ222	2.2kΩ	1
	R68	ERDS2TJ393	39kΩ	1
	R69	ERDS2TJ104	100kΩ	1
	R70	ERDS2TJ105	1MΩ	1
	R71	ERDS2TJ222	2.2kΩ	1
	R76, 77 ⚠	ERF5TJ220	22Ω, 5W, FLAME-PROOF	2
○	R78 ⚠	ERF2EXKR10V	0.1Ω, 2W, FLAME-PROOF	1
○	R79 ⚠	ERF2EXKR10V	0.1Ω, 2W, FLAME-PROOF	1
	R80	ERDS2TJ223	22kΩ	1
	R81	ERDS2TJ153	15kΩ	1
	R82	ERDS2TJ333	33kΩ	1
	R83	ERDS2TJ223	22kΩ	1
	R84	ERDS2TJ153	15kΩ	1
	R85	ERDS2TJ333	33kΩ	1
	R86	ERDS2TJ103	10kΩ	1
	R87, 89	ERDS2TJ104	100kΩ	2
	R90	ERDS2TJ103	10kΩ	1
	R91	ERDS2TJ472	4.7kΩ	1
	R92	ERDS2TJ103	10kΩ	1
	R93	ERDS2TJ472	4.7kΩ	1
	R94	ERDS2TJ473	47kΩ	1
	R95	ERDS2TJ332	3.3kΩ	1
	R96	ERDS2TJ103	10kΩ	1
	R97, 98 ⚠	ERQ2CJP6R8S	6.8Ω, 2W, FUSE TYPE	2
	R99, 100	ERDS2TJ225	2.2MΩ	2
	R101, 102	ERDS2TJ682	6.8kΩ	2
		CAPACITORS		
	C1	ECQE1A104M6	0.1μF, 125V	1
○	C2	EC0S1HP682DB	6800μF, 50V	1
○	C3	EC0S1HP682DB	6800μF, 50V	1
	C4, 5	ECQV1H155JL	1.5μF	2
	C6	ECEA1HKA010	1μF, 50V	1
	C7	ECEA1CKA100	10μF, 16V	1
	C8	ECEA1HKA010	1μF, 50V	1
	C9	ECA1CM101	100μF, 16V	1
	C11	ECEA1CKA100	10μF, 16V	1
	C13	ECA1CM101	100μF, 16V	1
	C14, 15	ECCR1H100D	10pF	2
○	C16	QCBG1H104ZFA	0.1μF	1
	C17	ECQB1H103JF	0.01μF	1
	C18	ECQG1H682KZ	0.0068μF	1
	C19	ECQG1H152KZ	0.0015μF	1
	C20	ECQV1H104JM	0.1μF	1
	C21	ECQG1H152KZ	0.0015μF	1
	C22	ECQV1H104JM	0.1μF	1
	C23	ECQG1H682KZ	0.0068μF	1
	C24	ECQV1H224JM	0.22μF	1
	C25	ECQB1H103JF	0.01μF	1
	C26	ECQV1H224JM	0.22μF	1
	C27	ECQB1H333JF	0.033μF	1
	C28	ECEA1HKN2R2	2.2μF, 50V	1
	C29	ECQV1H104JM	0.1μF	1
	C30	ECQB1H103JF	0.01μF	1

	Ref. No.	Part No.	Description	P/S
	C31	ECQG1H682KZ	0.0068μF	1
	C32	ECQG1H152KZ	0.0015μF	1
	C33	ECQV1H104JM	0.1μF	1
	C34	ECQG1H152KZ	0.0015μF	1
	C35	ECQV1H104JM	0.1μF	1
	C36	ECQG1H682KZ	0.0068μF	1
	C37	ECQV1H224JM	0.22μF	1
	C38	ECQB1H103JF	0.01μF	1
	C39	ECQV1H224JM	0.22μF	1
	C40	ECQB1H333JF	0.033μF	1
	C41	ECEA1HKN2R2	2.2μF, 50V	1
	C42	ECQV1H104JM	0.1μF	1
	C43	ECCR1H220J	22pF	1
	C44	ECCR1H221J	220pF	1
	C46	ECQG1H222KZ	0.0022μF	1
	C47	ECCR1H220J	22pF	1
	C48	ECCR1H221J	220pF	1
	C50	ECQG1H222KZ	0.0022μF	1
○	C51	ECA1HHG221B	220μF, 50V	1
○	C52	ECA1HHG221B	220μF, 50V	1
○	C53	ECQV1H225JL3	2.2μF	1
○	C57	ECQV1H225JL3	2.2μF	1
	C61, 62	ECEA50Y1R5K	1.5μF, 50V	2
○	C63	QCBG1H104ZFA	0.1μF	1
○	C64	QCBG1H104ZFA	0.1μF	1
	C65, 66	ECEA1HKN010	1μF, 50V	2

ASUB ASUB CIRCUIT

	Ref. No.	Part No.	Description	P/S
		TRANSISTORS		
S	Q101	2SA1015-GR	2SA933STRS (SUB. PART)	1
S	Q102	2SC1815GR	TRANSISTOR	1
S	Q103, 104	2SA1015-GR	2SA933STRS (SUB. PART)	2
○	Q105	2SA970GTPE2	TRANSISTOR	1
○	Q106	2SC2240GTPE2	TRANSISTOR	1
S	Q107	2SC1815GR	TRANSISTOR	1
S	Q108, 111	2SA1015-GR	2SA933STRS (SUB. PART)	2
○	Q109	2SA970GTPE2	TRANSISTOR	1
○	Q110	2SC2240GTPE2	TRANSISTOR	1
S	Q112	2SC1815GR	TRANSISTOR	1
S	Q113, 114	2SA1015-GR	2SA933STRS (SUB. PART)	2
○	Q115	2SA970GTPE2	TRANSISTOR	1
○	Q116	2SC2240GTPE2	TRANSISTOR	1
S	Q117	2SC1815GR	TRANSISTOR	1
S	Q118	2SA1015-GR	2SA933STRS (SUB. PART)	1
○	Q119	2SA970GTPE2	TRANSISTOR	1
○	Q120	2SC2240GTPE2	TRANSISTOR	1
S	Q121	2SC1815GR	TRANSISTOR	1
S	Q122	2SA1015-GR	2SA933STRS (SUB. PART)	1
S	Q123	2SC1815GR	TRANSISTOR	1
S	Q124	2SA1015-GR	2SA933STRS (SUB. PART)	1
		DIODES		
	D101, 102, 107, 108	MA165	DIODE	4
		RESISTORS		
○	R101 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1
	R102, 103	ERDS2TJ152	1.5kΩ	2
	R104	ERDS2TJ472	4.7kΩ	1
○	R105 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1
○	R106 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1

Ref. No.	Part No.	Description	P/S
○ R107 ⚠	ERD2FCVG471T	470Ω, 1/4W, FUSE TYPE	1
○ R108 ⚠	ERD2FCVG471T	470Ω, 1/4W, FUSE TYPE	1
R109, 110	ERDS2TJ103	10kΩ	2
○ R113 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1
R114, 115	ERDS2TJ152	1.5kΩ	2
R116	ERDS2TJ472	4.7kΩ	1
○ R117 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1
○ R118 ⚠	ERD2FCVG221T	220Ω, 1/4W, FUSE TYPE	1
○ R119 ⚠	ERD2FCVG471T	470Ω, 1/4W, FUSE TYPE	1
○ R120 ⚠	ERD2FCVG471T	470Ω, 1/4W, FUSE TYPE	1
R121, 122	ERDS2TJ103	10kΩ	2
CAPACITORS			
C101	ECBA1H151KB	150pF	1
C102	ECBA1H681KB5	680pF	1
C103	ECBA1H681KB5	680pF	1
C104	ECBA1H151KB	150pF	1
C105	ECBA1H681KB5	680pF	1
C106	ECBA1H681KB5	680pF	1

ACP AC POWER SUPPLY CIRCUIT

Ref. No.	Part No.	Description	P/S
COIL			
L1 ⚠	QLQGT2T100SA	10μH×2	1
JACK			
JK1 ⚠	SJVD0203B	AC INLET	1
SWITCH			
S1 ⚠	SSRG100A	VOLTAGE SELECTOR, X XS XD XT	1
FUSES			
○ F1 ⚠	XBA1C40NB100	T4A, 125V, M MC XM	1
○ F1 ⚠	XBA2C31TB0L	T3.15A, 250V, X XS XD XT	1
○ F2 ⚠	XBA2C16TB0L	T1.6A, 250V, X XS XD XT	1
○ F3 ⚠	XBA2C16TB0L	T1.6A, 250V, EN EZ EW EF EA EH EP EK XL XR XP XW X XS XD XT	1
CAPACITORS			
C1 ⚠	ECKCVA1472MF	4700pF, LINE CAPACITOR	1
C2 ⚠	ECQU2A104MN	0.1μF, 250V, ACROSS-THE LINE CAPACITOR	1

PKB PEDAL KEYBOARD CIRCUIT

Ref. No.	Part No.	Description	P/S
SWITCHES			
S1~3	QSTGT001AA	LEVER SWITCH	3
RESISTORS			
R8~10	ERDS2TJ472	4.7kΩ	3
CAPACITOR			
C1	ECRF1H104ZF	0.1μF	1

MKB1 MANUAL KEYBOARD 1 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC1	ST93C46CB1	1M BIT PROGRAMMED EEPROM	1
IC2	HD74LS138P	3 TO 8 DECODER	1
DIODES			
D1~88	MA165	DIODE	88
CAPACITORS			
C1	ECRF1H104ZF	0.1μF	1
C2	ECEA0JKA470	47μF, 6.3V	1
C3, 4	ECRF1H104ZF	0.1μF	2

MKB2 MANUAL KEYBOARD 2 CIRCUIT

Ref. No.	Part No.	Description	P/S
INTEGRATED CIRCUITS			
IC3, 4	HD74LS138P	3 TO 8 DECODER	2
DIODES			
D89~176	MA165	DIODE	88
CAPACITORS			
C5, 6	ECRF1H104ZF	0.1μF	2

■WIRING PARTS

Ref. No.	Part No.	Description	P/S
○ W1	QEXGVH06100B	CONNECTOR WITH WIRE	1
○ W2	QEXGVH04105C	CONNECTOR WITH WIRE	1
W3	QEXGSS06055A	CONNECTOR WITH WIRE	1
○ W4	QEXGVH03140B	CONNECTOR WITH WIRE	1
W5	QJLG013AA	PEDAL CORD	1
W6	QEXGSS16100A	CONNECTOR WITH WIRE	1
W7	QEXGSS04100A	CONNECTOR WITH WIRE	1
W9	QEXGEL06085D	CONNECTOR WITH WIRE	1
W10	QEXGSS05045B	CONNECTOR WITH WIRE	1
W11	QEXGSS04010A	CONNECTOR WITH WIRE	1
○ W12	QEXGSS12055A	CONNECTOR WITH WIRE	1
○ W13	QEXGZA05078B	CONNECTOR WITH WIRE	1
○ W15	QEXGZA34075B	CONNECTOR WITH WIRE	1
W16	QEUGKCH06BB	FLAT CABLE	1
W17	QEUGK8H07BB	FLAT CABLE	1
W18	QEXGSS10025A	CONNECTOR WITH WIRE	1
○ W19	QEXGSS07025A	CONNECTOR WITH WIRE	1
W20	QEXGSS05025A	CONNECTOR WITH WIRE	1

REPLACEMENT PARTS LIST......Cabinet and Chassis Parts

otes:

. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
After the end of this period, the assembly will no longer be available.

2. ○ mark are new parts.

Cabinet Colour
- SX-PR602......Black
- SX-PR602M......Walnut

3. Important safety notice
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthetic resin
In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./ Material column.

SX-PR602 CABINET & CHASSIS PARTS

	Ref. No.		Part No.	Description	P/S
	SPEAKERS				
○	SP1, 2		EAS16PL471C3	16cm, 4Ω	2
	SP3, 4		EAS65PH31A3	6.5cm, 8Ω	2
	POWER TRANSFORMERS				
○	T1	⚠	QTPG1M053A	POWER TRANSFORMER, EN EK EZ EW EF EA EP EH X XL XR XS XT XD XP XW	1
○	T1	⚠	QTPG1M054A	POWER TRANSFORMER, M MC XM	1
	POWER CORDS & PLUG				
○	PC1	⚠	QJAG027AA	POWER CORD, EN EZ EW EF EA EP EH X XS XT XP XW	1
	PC1	⚠	QJAG025AA	POWER CORD, M MC XM	1
○	PC1	⚠	QJAG028AA	POWER CORD, EK XD	1
○	PC1	⚠	QJAG029AA	POWER CORD, XL XR	1
	PC2	⚠	SJP5213-1	ATTACHMENT PLUG, X XT XP	1
	CABINET PARTS				
○	1		QKQGN887AA	MUSIC STAND	1
	2		SBLG230A	STAY	2
○	3		QKQGA132AA	TOP COVER ASS'Y	1
	3-1		QMRG7021AB	SLEEVE	2
	3-2		QMFG1237AA	FELT	3
	3-3		QMFG1057AA	FELT	4
	3-4		SGBG160B	BADGE	1
○	6		QKQGF034AA	KEYBOARD COVER ASS'Y	1
	6-1		QGKG0095AD	ORNAMENT	1
○	6-2		QMFG1258AA	FELT	2
	6-3		QMRG7031DC	PROTECTOR	1
	6-4		QMRG7032DC	PROTECTOR	1
○	6-5		QMFG1259AA	FELT	2
○	6-6		QMFG1260AA	FELT	2
○	6-7		QMFG1262AA	FELT	1
○	6-8		QMFG1261AA	FELT	1
	6-9		QXQG007AA	AXLETREE	1
	6-10		QMRG7056AA	HOLDER	2
	6-11		QWBG002AA	HOLDER	1
○	7		QKQGN891AA	CROSS BOARD	1
	10		SHRG9620A	CORD CLAMPER	3
○	11		QKQGB485AA	LEFT PLANK ASS'Y	1

SX-PR602M CABINET & CHASSIS PARTS

	Ref. No.		Part No.	Description	P/S
	SPEAKERS				
○	SP1, 2		EAS16PL471C3	16cm, 4Ω	2
	SP3, 4		EAS65PH31A3	6.5cm, 8Ω	2
	POWER TRANSFORMERS				
○	T1	⚠	QTPG1M053A	POWER TRANSFORMER, EZ EK EW EF EA EP XL XR	1
○	T1	⚠	QTPG1M054A	POWER TRANSFORMER, M MC XM	1
	POWER CORDS & PLUG				
○	PC1	⚠	QJAG027AA	POWER CORD, EZ EW EF EA EP	1
	PC1	⚠	QJAG025AA	POWER CORD, M MC XM	1
○	PC1	⚠	QJAG028AA	POWER CORD, EK	1
○	PC1	⚠	QJAG029AA	POWER CORD, XL XR	1
	CABINET PARTS				
○	1		QKQGN887AB	MUSIC STAND	1
	2		SBLG230A	STAY	2
○	3		QKQGA132AB	TOP COVER ASS'Y	1
	3-1		QMRG7021AA	SLEEVE	2
	3-2		QMFG1237AA	FELT	3
	3-3		QMFG1057AA	FELT	4
	3-4		SGBG160B	BADGE	1
○	6		QKQGF034AB	KEYBOARD COVER ASS'Y	1
	6-1		QGKG0095AC	ORNAMENT	1
○	6-2		QMFG1258AA	FELT	2
	6-3		QMRG7031DC	PROTECTOR	1
	6-4		QMRG7032DC	PROTECTOR	1
○	6-5		QMFG1259AA	FELT	2
○	6-6		QMFG1260AA	FELT	2
○	6-7		QMFG1262AA	FELT	1
○	6-8		QMFG1261AA	FELT	1
	6-9		QXQG007AA	AXLETREE	1
	6-10		QMRG7056AA	HOLDER	2
	6-11		QWBG002AA	HOLDER	1
○	7		QKQGN891AB	CROSS BOARD	1
	10		SHRG9620A	CORD CLAMPER	3
○	11		QKQGB485AB	LEFT PLANK ASS'Y	1
	11-1		SHRG2130B-K	FOOT	3
○	11-2		QMGG057AA	SPACER	1
○	12		QKQGB486AA	RIGHT PLANK ASS'Y	1

SX-PR602

Ref. No.			Part No.	Description	P/S
	11-1		⎛SHRG2130B-K	FOOT	3
○	11-2		⎝QMGG057AA	SPACER	1
○	12		QKQGB486AA	RIGHT PLANK ASS'Y	1
	12-1		⎛SHRG2130B-K	FOOT	3
○	12-2		⎝QMGG057AA	SPACER	1
○	13		QKQGM093AA	PEDAL BOX ASS'Y	1
	13-1		[QGKG0113AA	ORNAMENT	3
	14		SHRG1230A	CORD CLAMPER	1
	15		QMBG009AA	SPRING	3
	16		QMFG1133AA	FELT	3
	17		QMFG1134AA	FELT	3
	18		QMWG4002AA	PEDAL ARM	3
	19		QMFG1135AA	FELT	3
	20		QKAG0011AA	FOOT	1
○	30		QMFG4222AA	CUSHION	2
	31		SBNG7050A	KNOB	2
	32	ABS	QGUG3002BB	DIAL WHEEL	1
○	33		QKWG033AB	LCD PANEL	1
○	34	PS	QGPG0133CB	CONTROL PANEL	1
	35		QMFG1140AA	FELT	1
○	36		QGUG1202BB	BUTTON	1
○	37		QGUG1205BB	BUTTON	1
○	38		QGUG1201CB	BUTTON	1
○	39		QGUG1204CB	BUTTON	1
○	40		QGUG1207BB	BUTTON	1
○	41		QGUG1463AA	BUTTON	1
○	42		QGUG1462CA	BUTTON	1
○	45		QGUG1462BA	BUTTON	1
○	46		QGUG1461AA	BUTTON	1
○	47		QGUG1468AA	BUTTON	1
○	48		QGUG1465AA	BUTTON	1
○	49		QMFG4214AA	CUSHION	2
○	50		QGUG1471AA	BUTTON	2
○	51		QGUG1466AA	BUTTON	1
○	52		QGUG1459AA	BUTTON	1
○	53		QGUG1202CB	BUTTON	1
○	54		QGUG1460AA	BUTTON	1
○	55		QGUG1467AA	BUTTON	1
○	56		QGUG1204BB	BUTTON	1
○	57		QGUG1216AB	BUTTON	1
○	58		QGUG1203BB	BUTTON	1
○	59		QGUG1203BB	BUTTON	1
○	60		QGUG1206BB	BUTTON	2
○	61		QGUG1203CB	BUTTON	2
○	62		QGUG1464AA	BUTTON	1
○	64		QGUG1203BB	BUTTON	1
○	65		QGUG1203DB	BUTTON	1
○	66		QGKG0096CD	AC JACK PANEL, EN M MC XM EK EZ EW EF EA EP EH XL XR XP XW	1
○	66		QGKG0096DC	AC JACK PANEL, X XS XT XD	1
○	67	⚠	SJS9231A	AC INLET COVER, EN EK EZ EW EF EA EP EH X XL XR XS XT XD XP XW	1
	67	⚠	SJS9334A	AC INLET COVER, M MC XM	1
	68		QMRG7029AC	BRACKET	1
	69		QMRG7028AC	BRACKET	1
○	70		QGKG0076FB	EXTERNAL JACK PANEL	1
	72		QKAG0012AA	FOOT	2
	73		QMRG7086AA	LID, GUIDE	2
○	74		QMBG023AA	SPRING	1
○	75	PS	QKSGG028AA	GUIDE	1
○	76	PS	QKSGG029AA	GUIDE	1
	77		QAUG019AA	DISK DRIVE UNIT	1
	78		QMFG1220AA	FELT	1

SX-PR602M

Ref. No.			Part No.	Description	P/S
	12-1		⎛SHRG2130B-K	FOOT	3
○	12-2		⎝QMGG057AA	SPACER	1
○	13		QKQGM093AB	PEDAL BOX ASS'Y, EZ	1
	13-1		[QGKG0113AA	ORNAMENT	3
○	13		QKQGM093AC	PEDAL BOX ASS'Y, M MC EK EW EF EA EP XL XR XM	1
	13-1		[QGKG0113AA	ORNAMENT	3
	14		SHRG1230A	CORD CLAMPER	1
	15		QMBG009AA	SPRING	3
	16		QMFG1133AA	FELT	3
	17		QMFG1134AA	FELT	3
	18		QMWG4002AA	PEDAL ARM	3
	19		QMFG1135AA	FELT	3
	20		QKAG0011AA	FOOT	1
○	30		QMFG4222AA	CUSHION	2
	31		SBNG7050A	KNOB	2
	32	ABS	QGUG3002BB	DIAL WHEEL	1
○	33		QKWG033AB	LCD PANEL	1
○	34	PS	QGPG0133CB	CONTROL PANEL	1
	35		QMFG1140AA	FELT	1
○	36		QGUG1202BB	BUTTON	1
○	37		QGUG1205BB	BUTTON	1
○	38		QGUG1201CB	BUTTON	1
○	39		QGUG1204CB	BUTTON	1
○	40		QGUG1207BB	BUTTON	1
○	41		QGUG1463AA	BUTTON	1
○	42		QGUG1462CA	BUTTON	1
○	45		QGUG1462BA	BUTTON	1
○	46		QGUG1461AA	BUTTON	1
○	47		QGUG1468AA	BUTTON	1
○	48		QGUG1465AA	BUTTON	1
○	49		QMFG4214AA	CUSHION	2
○	50		QGUG1471AA	BUTTON	2
○	51		QGUG1466AA	BUTTON	1
○	52		QGUG1459AA	BUTTON	1
○	53		QGUG1202CB	BUTTON	1
○	54		QGUG1460AA	BUTTON	1
○	55		QGUG1467AA	BUTTON	1
○	56		QGUG1204BB	BUTTON	1
○	57		QGUG1216AB	BUTTON	1
○	58		QGUG1203BB	BUTTON	1
○	59		QGUG1203BB	BUTTON	1
○	60		QGUG1206BB	BUTTON	2
○	61		QGUG1203CB	BUTTON	2
○	62		QGUG1464AA	BUTTON	1
○	64		QGUG1203BB	BUTTON	1
○	65		QGUG1203DB	BUTTON	1
○	66		QGKG0096CD	AC JACK PANEL	1
○	67	⚠	SJS9231A	AC INLET COVER, EZ EK EW EF EA EP XL XR	1
	67	⚠	SJS9334A	AC INLET COVER, M MC XM	1
	68		QMRG7029AC	BRACKET	1
	69		QMRG7028AC	BRACKET	1
○	70		QGKG0076FB	EXTERNAL JACK PANEL	1
	72		QKAG0012AA	FOOT	2
	73		QMRG7086AA	LID, GUIDE	2
○	74		QMBG023AA	SPRING	1
○	75	PS	QKSGG028AA	GUIDE	1
○	76	PS	QKSGG029AA	GUIDE	1
	77		QAUG019AA	DISK DRIVE UNIT	1
	78		QMFG1220AA	FELT	1
	79		QEXGRA01007H	WIRE	1
	80		QMGG029AA	FLOATING RUBBER	4
○	81		QMRG7082AA	SPEAKER COVER	2
	82		QMFG9012AA	SOUND ABSORBING MATERIAL	2

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Ref. No.	Part No.	Description	P/S
79	QEXGRA01007H	WIRE	1
80	QMGG029AA	FLOATING RUBBER	4
○ 81	QMRG7082AA	SPEAKER COVER	2
82	QMFG9012AA	SOUND ABSORBING MATERIAL	2
○ 83	QSCG108A	SHIELD, EN EK EZ EW EF EA EP EH XL XR	1
○ 90	QYKG235AA	CABINET ASS'Y	1
91	QMFG4103AA	CUSHION	1
92	QLZG017A	CORE	8
93	SGKG980A	LABEL	1
○ 94	QMGG054AA	SPACER	2
○ 95	QEXGRA01007K	WIRE	1
○ 96 ⚠	QMRG7021AA	FUSE COVER, EN EK EZ EW EF EA EP EH XL XR XP XW M MC XM	1
○ 96 ⚠	QMRG7021AA	FUSE COVER, X XS XD XT	1

SCREWS & WASHERS

Ref. No.	Part No.	Description	P/S
N1	XTW3+10Q	SCREW	3
N2	XTWSG2	SCREW WITH WASHER	2
N3	XNS12FZ	NUT	2
N4	XYN4+F16	SCREW WITH WASHER	4
N5	QHDG043AA	SCREW WITH WASHER	4
N6	XYN3+F6	SCREW WITH WASHER	1
N7	XTW3+8J	SCREW	1
N8	XTT4+14A	SCREW	16
N9	XTT4+10AFZ	SCREW	2
N10	XTT4+10A	SCREW	8
N11	XTB4+10B	SCREW	2
N12	XTT4+12AFZ	SCREW	1
N13	XTT4+16A	SCREW	2
N14	XYN4+F16FZ	SCREW WITH WASHER	3
N15	XTB35+14A	SCREW	1
N16	XTWSG2	SCREW WITH WASHER	6
N17	XTW3+10Q	SCREW	50
N19	XYN4+F25	SCREW WITH WASHER	14
N20	XTB35+10A	SCREW	2
N21	SNEG2660A	SCREW	9
N22	QHDG021AA	SCREW WITH WASHER	10
N25	QHWG007AA	NUT	2
N26	SNEG2400A	SCREW WITH WASHER	2
N27	XSN5+85	SCREW	4
N28	XWA5B	WASHER	4
N29	SNEG150A	WASHER	4
N30	XTB35+10A	SCREW	13
○ N31	GTT4+35AFZ	SCREW	4
N32	XTB3+10AFZ	SCREW	2
N33	XTB35+16A	SCREW	12
N34	XTN4+50AFZ	SCREW	4
N35	XWG4G16	WASHER	1
N36	XTB35+20A	SCREW	2
N37	XTW3+16J	SCREW	12
N39	XTT5+20AFZ	SCREW	4
N40	SNEG2660A	SCREW, EN EK EZ EW EF EA EP EH XL XR	7
N42	QHDG016AB	SCREW WITH WASHER	6
N44	QHDG032AB	SCREW WITH WASHER	4
N45	XTN4+16F	SCREW WITH WASHER	1

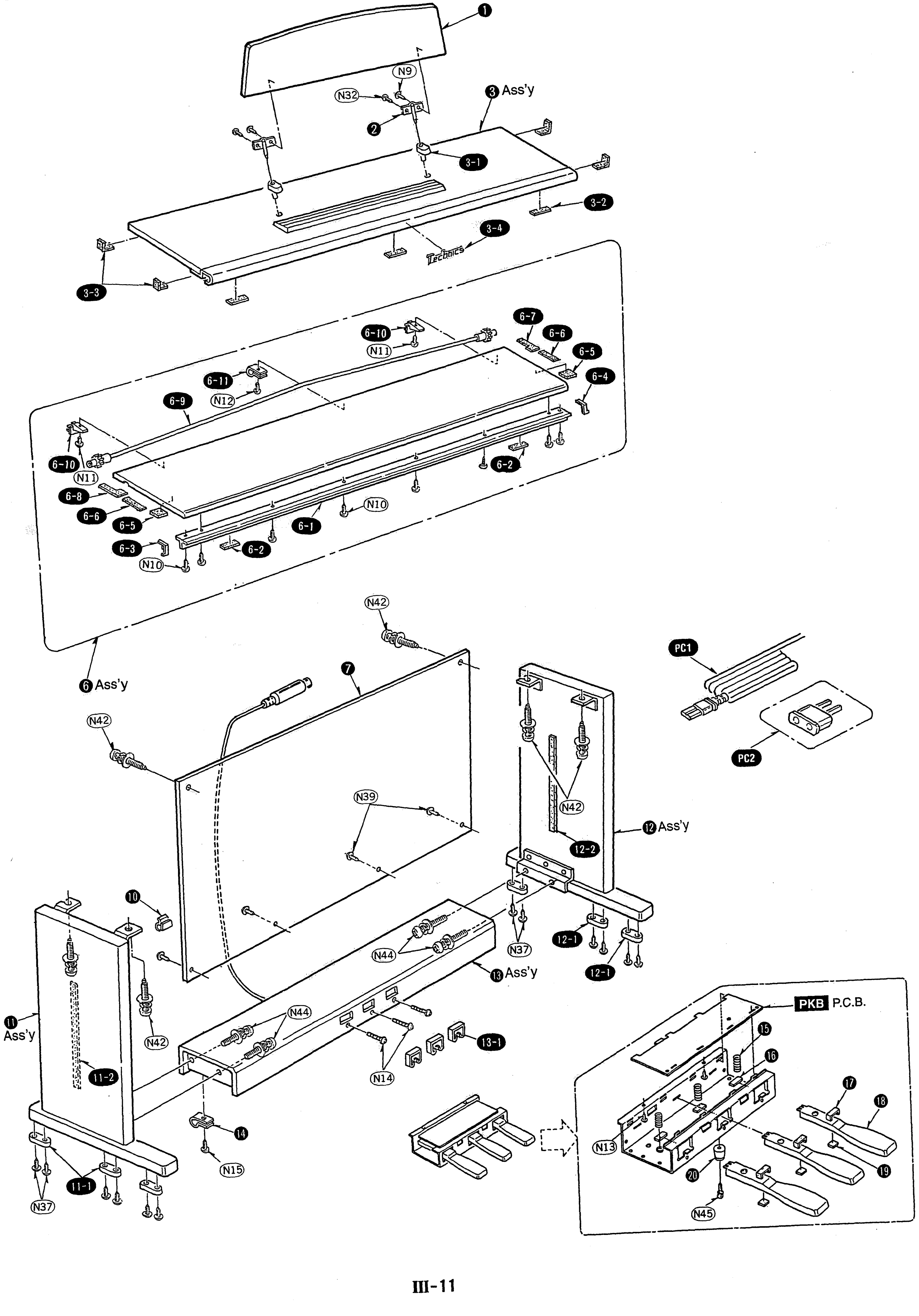
SX-PR602M

Ref. No.	Part No.	Description	P/S
○ 83	QSCG108A	SHIELD, EK EW EF EA EP XL XR	1
○ 90	QYKG235AC	CABINET ASS'Y	1
91	QMFG4103AA	CUSHION	1
92	QLZG017A	CORE	8
93	SGKG980A	LABEL	1
○ 94	QMGG054AA	SPACER	2
○ 95	QEXGRA01007K	WIRE	1
○ 96 ⚠	QMRG7021AA	FUSE COVER	1

SCREWS & WASHERS

Ref. No.	Part No.	Description	P/S
N1	XTW3+10Q	SCREW	3
N2	XTWSG2	SCREW WITH WASHER	2
N3	XNS12FZ	NUT	2
N4	XYN4+F16	SCREW WITH WASHER	4
N5	QHDG043AA	SCREW WITH WASHER	4
N6	XYN3+F6	SCREW WITH WASHER	1
N7	XTW3+8J	SCREW	1
N8	XTT4+14A	SCREW	16
N9	XTT4+10AFZ	SCREW	2
N10	XTT4+10A	SCREW	8
N11	XTB4+10B	SCREW	2
N12	XTT4+12AFZ	SCREW	1
N13	XTT4+16A	SCREW	2
N14	XYN4+F16FZ	SCREW WITH WASHER	3
N15	XTB35+14A	SCREW	1
N16	XTWSG2	SCREW WITH WASHER	6
N17	XTW3+10Q	SCREW	50
N19	XYN4+F25	SCREW WITH WASHER	14
N20	XTB35+10A	SCREW	2
N21	SNEG2660A	SCREW	9
N22	QHDG021AA	SCREW WITH WASHER	10
N25	QHWG007AA	NUT	2
N26	SNEG2400A	SCREW WITH WASHER	2
N27	XSN5+85	SCREW	4
N28	XWA5B	WASHER	4
N29	SNEG150A	WASHER	4
N30	XTB35+10A	SCREW	13
○ N31	GTT4+35AFZ	SCREW	4
N32	XTB3+10AFZ	SCREW	2
N33	XTB35+16A	SCREW	12
N34	XTN4+50AFZ	SCREW	4
N35	XWG4G16	WASHER	1
N36	XTB35+20A	SCREW	2
N37	XTW3+16J	SCREW	12
N39	XTT5+20AFZ	SCREW	4
N40	SNEG2660A	SCREW, EK EW EF EA EP XL XR	7
N42	QHDG016AB	SCREW WITH WASHER	6
N44	QHDG032AB	SCREW WITH WASHER	4
N45	XTN4+16F	SCREW WITH WASHER	1

■CABINET PARTS LOCATION



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N9
N32
❸ Ass'y
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PC1
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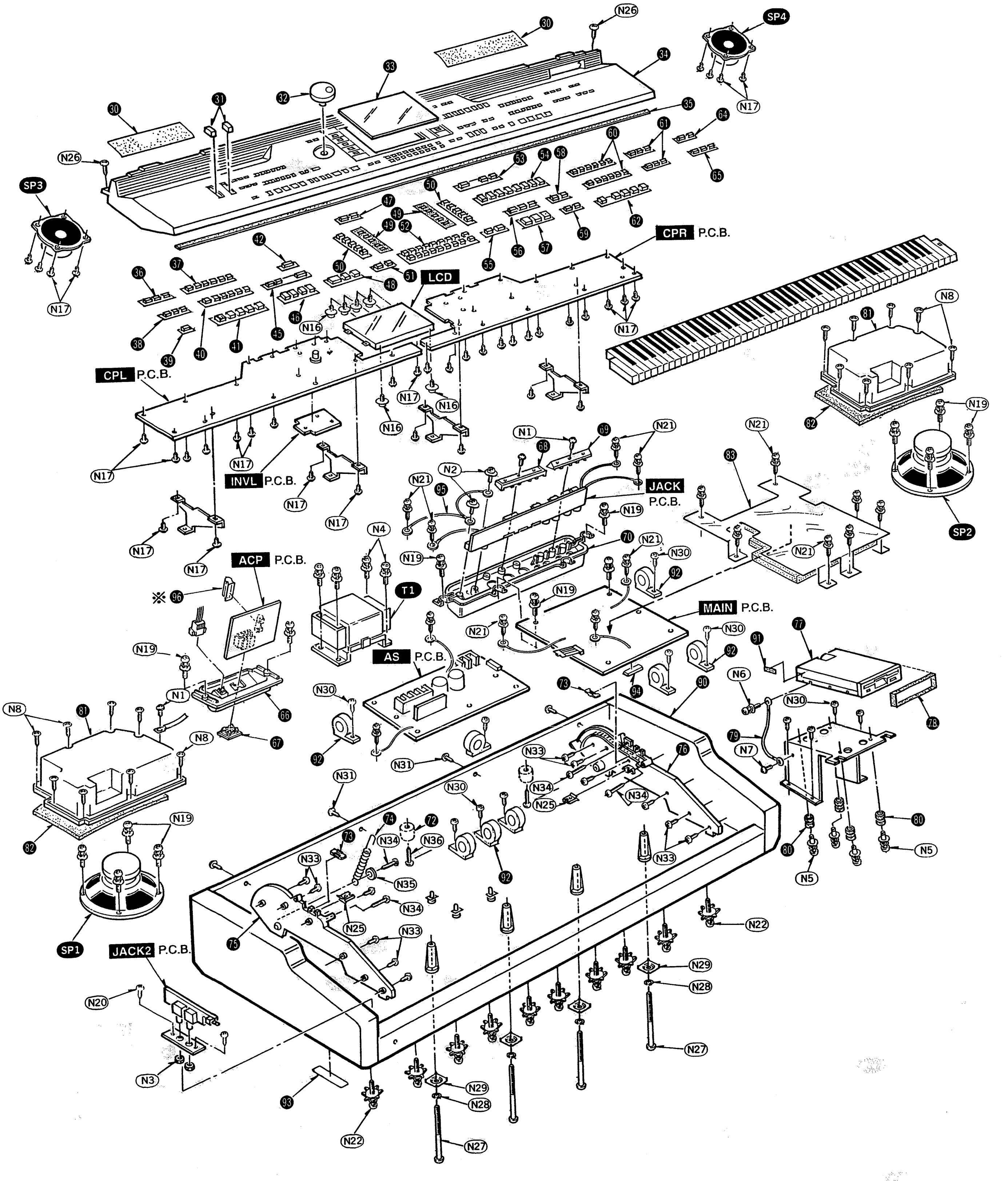
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CPR P.C.B.
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CPL P.C.B.
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INVL P.C.B.
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JACK P.C.B.
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SP2
ACP P.C.B.
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T1
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MAIN P.C.B.
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AS P.C.B.
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SP1
JACK2 P.C.B.
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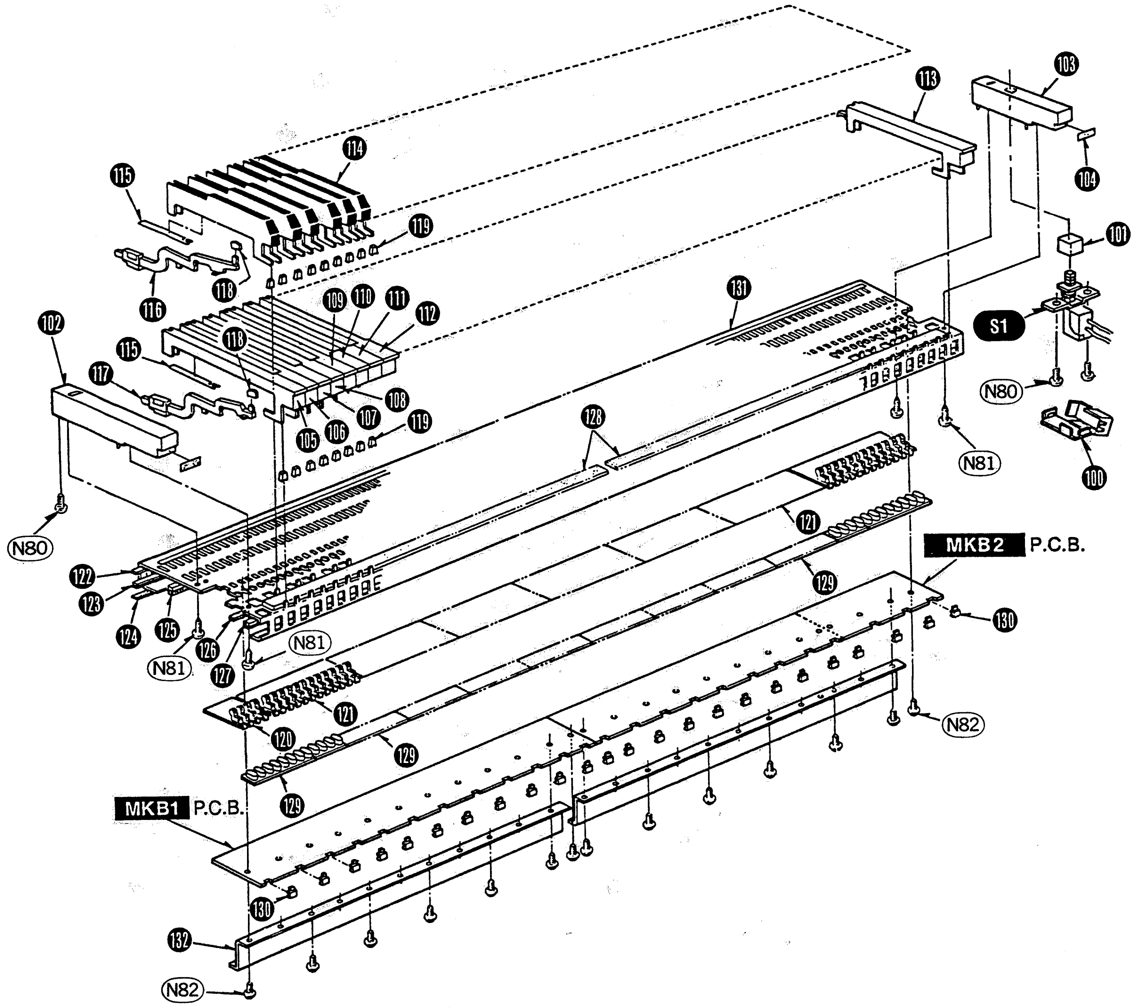
■MANUAL KEYBOARD PARTS LOCATION



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MKB2 P.C.B.
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MKB1 P.C.B.
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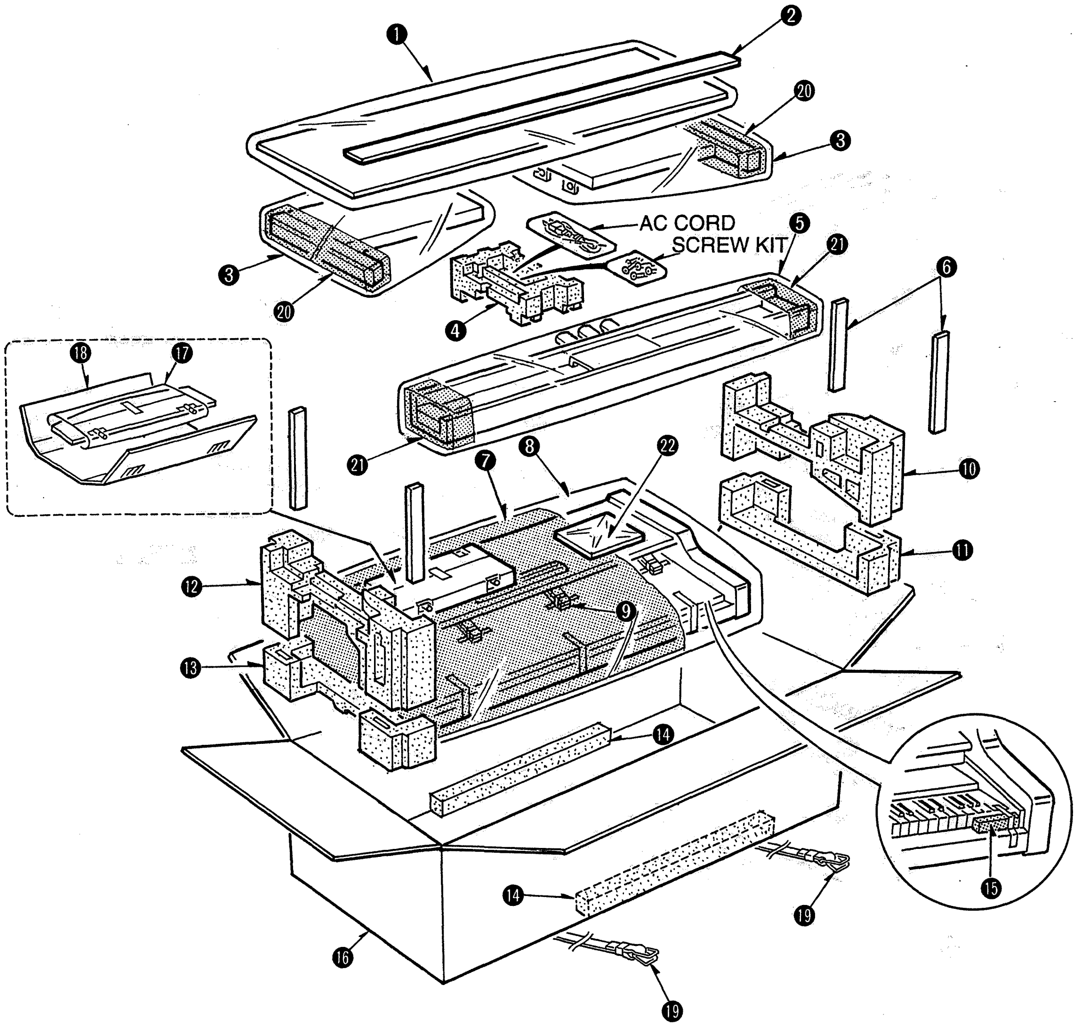
■MANUAL KEYBOARD PARTS

Ref. No.	Part No.	Description	P/S
	SWITCH		
S1 ⚠	ESB8273V	POWER SWITCH	1
	MANUAL KEYBOARD PARTS		
100 ⚠ PP	SHRG8390A	COVER, POWER SW	1
101 ABS	QGUG1040AA	BUTTON, POWER SWITCH	1
102 PS	QGPG0042AB	END COVER PANEL, RIGHT	1
103 PS	QGPG0041BB	END COVER PANEL, LEFT	1
104	QMFG1104AA	FELT	2
105 AS	QMWG1001AB	WHITE KEY (FIRST OCTAVE A KEY)	1
106 AS	QMWG1002AB	WHITE KEY (B KEY)	8
107 AS	QMWG1003AB	WHITE KEY (C KEY)	7
108 AS	QMWG1004AB	WHITE KEY (D KEY)	7
109 AS	QMWG1005AB	WHITE KEY (E KEY)	7
110 AS	QMWG1006AB	WHITE KEY (F KEY)	7
111 AS	QMWG1007AB	WHITE KEY (G KEY)	7
112 AS	QMWG1008AB	WHITE KEY (A KEY)	7
113 AS	QMWG1009AB	WHITE KEY (TOP OCTAVE C KEY)	1
114 AS	QMWG2001AC	BLACK KEY	36
115	SUSG534A	SPRING	88
116	QMWG8019CA	HAMMER (BLACK KEY)	36
117	QMWG8017DA	HAMMER (WHITE KEY)	52

Ref. No.	Part No.	Description	P/S
118	SHGG9121A	RUBBER CAP (HAMMER)	88
119 PA	QMWG8037AA	KEY GUIDE	88
120 ABS	QMWG8022AA	FULCURUM (4 PCS. ON ONE)	1
121 ABS	QMWG8021AA	FULCURUM (12P CS. ON ONE)	7
122	SHRGA9080A	SPONGE	2
123	QMFG1073AA	FELT	2
124	QMFG1230AA	FELT	2
125	QMFG1101AA	FELT	2
126	QMFG1061AB	FELT	2
127	QMFG1231AC	FELT	2
128	QMFG1086AB	FELT	2
129	QMWG6006AA	RUBBER SWITCH (8 PCS. ON ONE)	11
130	SHRG9751A	P.C.B. HOLDER	24
131	QMWG3003CA	CHASSIS	1
132	SUWG3154A	ANGLE	2
	SCREWS		
N80	XTV3+10C	SCREW	2
N81	XTB4+12A	SCREW	4
N82	XTW3+10T	SCREW	14

PACKING



PACKING PARTS

Ref. No.			Part No.	Description	P/S
PACKING PARTS					
	1	PE	QPFG013AA	POLYETHYLENE BAG	1
	2		QPNG0358AA	TOP CARDBOARD	1
	3	PE	QPFG006AA	POLYETHYLENE BAG	2
○	4	PS	QPNG0702AA	PAD	1
	5	PE	QPFG026AA	POLYETHYLENE BAG	1
○	6		QPQG063AB	PROP	4
	7	PE	QPHG028AA	PROTECTION SHEET	1
	8	PE	QPFG013AA	POLYETHYLENE BAG	1
	9		SPNG5161A	SPACER	3
○	10	PS	QPNG0699AA	PAD	1
○	11	PS	QPNG0701AA	PAD	1
○	12	PS	QPNG0698AA	PAD	1
○	13	PS	QPNG0700AA	PAD	1
○	14	PS	QPNG0703AA	PAD	2
	15	PE	QPNG0556AA	SPACER	2
○	16		QPGG0413AA	PACKING CASE, PAPER, SX-PR602	1
○	16		QPGG0413AB	PACKING CASE, PAPER, SX-PR602M	1
	17	PE	SPHG1490A	PROTECTION SHEET	1
○	18		QPGG0415AA	PAD	1
	19		SPSG40A	BAND	2
○	20	PE	QPHG093AA	PROTECTION SHEET	2
○	21	PE	QPHG094AA	PROTECTION SHEET	2

Ref. No.		Part No.	Description	P/S
OPERATING INSTRUCTION MANUAL				
○	22	QQFGPR702AA	OPERATING INSTRUCTION MANNUAL, EN EK EP X XL XR XS XT XD XP XM XW	1
○	22	QQFGPR702BA	OPERATING INSTRUCTION MANNUAL, M	1
○	22	QQFGPR702CA	OPERATING INSTRUCTION MANNUAL, MC EF	1
○	22-1	(QQTG0497A	ENGLISH	1
○	22-2	QQTG0499A	FRANCAIS	1
○	22	QQFGPR702DA	OPERATING INSTRUCTION MANNUAL, EZ	1
○	22	QQFGPR702EA	OPERATING INSTRUCTION MANNUAL, EW	1
○	22-1	(QQTG0499A	FRANCAIS	1
○	22-2	QQTG0500A	DEUTSCH	1
○	22	QQFGPR702FA	OPERATING INSTRUCTION MANNUAL, EA	1
○	22	QQFGPR702GA	OPERATING INSTRUCTION MANNUAL, EH	1
○	22-1	(QQTG0501A	NERDERLANDS	1
○	22-2	QQTG0499A	FRANCAIS	1
○	22-3	QQTG0500A	DEUTSCH	1

ORDER NO. EMID981701
A4

Service Manual

Supplement-1

PCM Digital Ensemble

SX-PR602/PR602M

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP),
(EK), (XL), (XR), (XS), (XD), (XT), (X), (XP), (XW)

Please file and use this supplemental manual together with the service manual for Model No. SX-PR602/PR602M Order No. EMID981692.

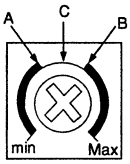
About the adjustment of switching amp

■ ADJUSTMENTS

Adjustment item	Necessary instrument	Adjustment condition	Adjustment point
Switching amp	Adjustment screwdriver not made from metal	Main volume is maximum	V.R. 1 on AS P.C.B.

Adjustments procedures

1. Turn VR1 until the end of the left. (Sounding the noise as a whistle.)
2. Turn VR1 to the right slowly with hearing as a whistle from monitor speaker, there is the point where the noise stops suddenly. (Point-A of Fig 1.)
3. Turn VR1 further to the right, sounding the whistle noise again. (Point-B of Fig 1.)
4. Set VR1 the center of between the point A and B. (Point-C of Fig 1.)



VR1 Fig.1

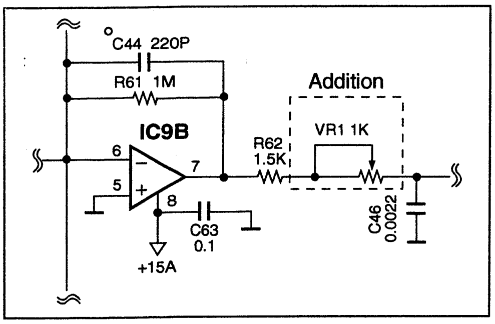
Change of Parts No.

AS AMP & POWER SUPPLY CIRCUIT (Refer to page Ⅲ-6)

REF. NO.		Parts No.		Description	P/S
		Original	**New**		
		RESISTOR			
	R62	ERDS2TJ222	**ERDS2TJ152**	1.5kΩ	1

Schematic Diagram Correction

AS AMP & POWER SUPPLY CIRCUIT (Refer to page Ⅱ-23)



⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics

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